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GLOBAL DATA MONITORING REPORT

March 1996

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIBU observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 $m\ s^{-1}$ have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 $m\ s^{-1}$ have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed ($m\ s^{-1}$)
7	RMS observation-background vector ($m\ s^{-1}$)

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 has been replaced by statistics for GOES-8 and GOES-9.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.¦bias¦	≥ 4 hPa	(pressure),
	≥ 5 m s^{-1}	(wind speed),
	≥ 30 degrees	(direction).
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
3.PGE	≥ 25	

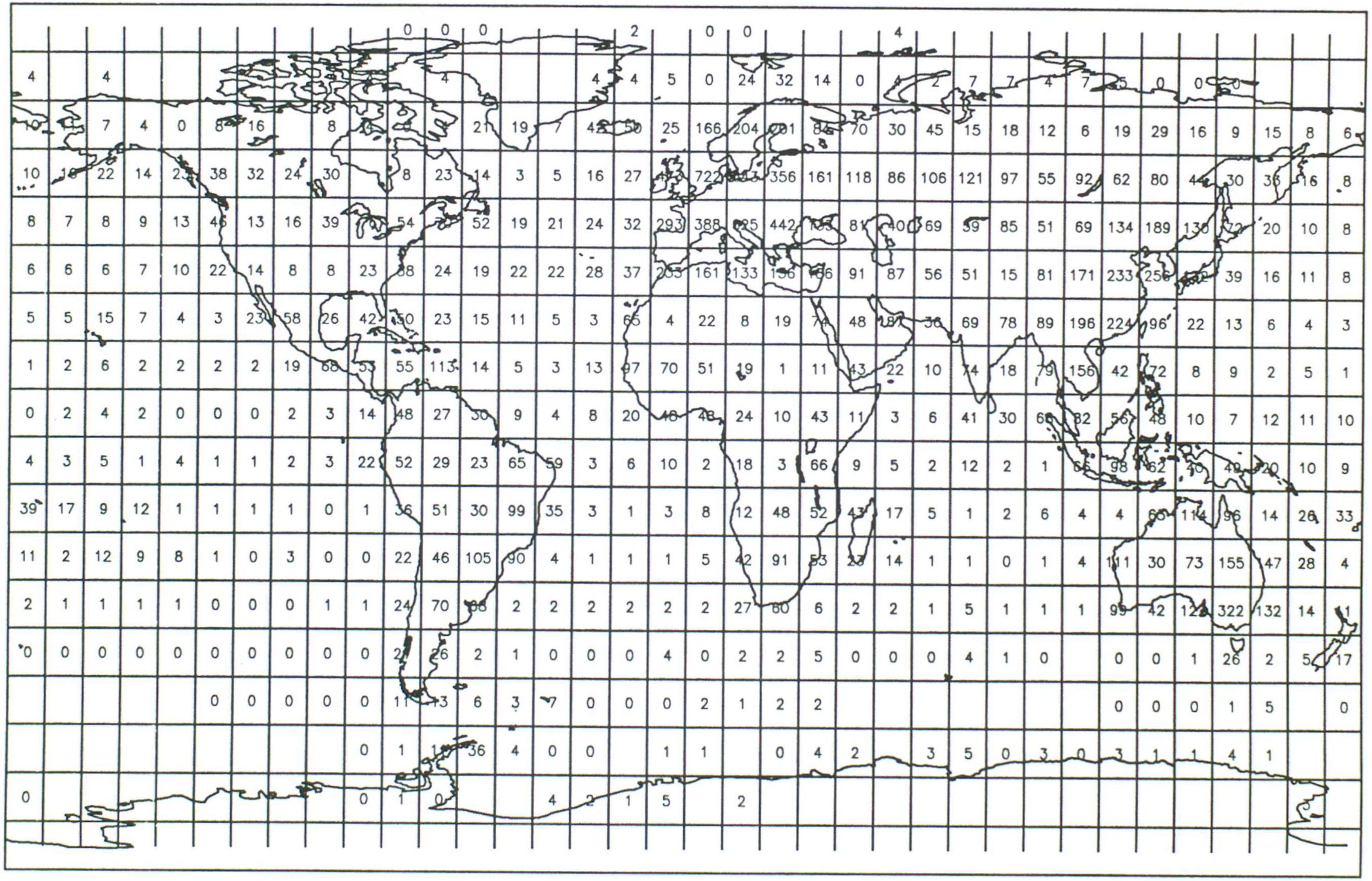
N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
C6BO9	ALL	MSLP	SUR	31	1	3	6.3	-8.1	10.3
C6JS	ALL	MSLP	SUR	54	5	9	2.5	9.0	9.4
C6LU3	ALL	MSLP	SUR	31	0	0	1.8	11.7	11.9
DGLU	ALL	MSLP	SUR	32	1	3	1.7	-5.1	5.4
D5NE	ALL	MSLP	SUR	53	16	30	5.8	-4.1	7.1
ELNG6	ALL	MSLP	SUR	45	29	64	0.5	-14.0	14.0
ELRE5	ALL	MSLP	SUR	40	0	0	1.5	4.5	4.8
EUJV	ALL	MSLP	SUR	41	2	5	2.0	8.4	8.6
J8HF2	ALL	MSLP	SUR	28	0	0	2.1	8.9	9.2
LAEB2	ALL	MSLP	SUR	25	7	28	6.0	-1.1	6.1
LAXP4	ALL	MSLP	SUR	25	2	8	4.8	-6.5	8.1
OUKV	ALL	MSLP	SUR	66	0	0	1.9	-4.1	4.5
OZBL2	ALL	MSLP	SUR	67	0	0	1.0	8.6	8.7
OZ2003	ALL	MSLP	SUR	30	0	0	1.2	-6.1	6.3
PJKI	ALL	MSLP	SUR	22	0	0	5.6	-4.4	7.1
PJRH	ALL	MSLP	SUR	32	0	0	0.9	4.2	4.3
P3XM4	ALL	MSLP	SUR	46	0	0	1.5	-4.8	5.0
S6CL	ALL	MSLP	SUR	23	1	4	0.9	5.8	5.9
UBAU	ALL	MSLP	SUR	43	0	0	2.3	-4.1	4.7
UFYN	ALL	MSLP	SUR	40	2	5	1.5	-4.4	4.7
UJJR	ALL	MSLP	SUR	47	0	0	2.6	-5.6	6.2
UPUA	ALL	MSLP	SUR	20	17	85	1.3	-10.7	10.8
UVJB	ALL	MSLP	SUR	26	0	0	1.4	5.2	5.4
V2QU	ALL	MSLP	SUR	40	0	0	1.2	-5.7	5.9
YJWZ7	ALL	MSLP	SUR	30	0	0	1.7	-7.2	7.4
YLBF	ALL	MSLP	SUR	21	0	0	1.1	4.8	4.9
ZSPP	ALL	MSLP	SUR	53	0	0	1.4	-5.0	5.2
3FGQ3	ALL	MSLP	SUR	26	0	0	1.5	5.4	5.6
9MBW7	ALL	MSLP	SUR	30	1	3	1.2	4.6	4.7
9VOP	ALL	MSLP	SUR	26	0	0	1.8	-4.1	4.4
WIND SPEED									
C6LC4	ALL	SPEED	SUR	20	0	0	3.7	9.7	10.4
DYZJ	ALL	SPEED	SUR	26	0	0	4.9	13.0	13.9
ELLE9	ALL	SPEED	SUR	39	0	0	4.3	6.6	7.9
ELRR5	ALL	SPEED	SUR	21	0	0	4.2	5.9	7.3
FNCM	ALL	SPEED	SUR	29	0	0	4.9	5.6	7.5
FNNK	ALL	SPEED	SUR	49	1	2	4.6	7.4	8.7
GHMA	ALL	SPEED	SUR	46	0	0	2.7	-6.1	6.7
LATF2	ALL	SPEED	SUR	54	0	0	4.7	6.8	8.3
MQKG7	ALL	SPEED	SUR	40	2	5	4.3	7.3	8.5
OUYM	ALL	SPEED	SUR	20	1	5	8.6	10.1	13.3
OVYA2	ALL	SPEED	SUR	60	0	0	5.2	6.2	8.1
UBAU	ALL	SPEED	SUR	37	0	0	4.0	5.0	6.4
VRID	ALL	SPEED	SUR	40	0	0	4.6	6.2	7.7
VRUA4	ALL	SPEED	SUR	27	0	0	4.8	12.0	12.9
ZCAZ7	ALL	SPEED	SUR	25	0	0	2.8	5.0	5.7
5LOU	ALL	SPEED	SUR	27	0	0	1.6	5.5	5.7
9KKL	ALL	SPEED	SUR	69	0	0	5.5	6.6	8.6
9KLT	ALL	SPEED	SUR	57	0	0	3.8	6.7	7.7
9MTZ	ALL	SPEED	SUR	24	13	54	7.1	11.3	13.3
9VBB	ALL	SPEED	SUR	27	0	0	5.0	5.8	7.7
WIND DIRECTION									
CG2614	ALL	DIRN.	SUR	39	0	0	29.1	34.3	45.0
OXIF2	ALL	DIRN.	SUR	22	0	0	90.8	-13.9	91.9
46053	ALL	DIRN.	SUR	41	0	0	36.7	-50.3	62.3
51007	ALL	DIRN.	SUR	95	0	0	32.5	-47.8	57.8
51008	ALL	DIRN.	SUR	103	0	0	28.7	-40.0	49.2
51015	ALL	DIRN.	SUR	57	0	0	65.3	-37.3	75.2
51018	ALL	DIRN.	SUR	65	0	0	82.8	28.2	87.5

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION									
51020	ALL	DIRN.	SUR	91	0	0	27.7	-37.2	46.4
51021	ALL	DIRN.	SUR	85	0	0	23.4	-33.1	40.5
51309	ALL	DIRN.	SUR	59	0	0	43.9	-42.2	60.9
52008	ALL	DIRN.	SUR	65	0	0	55.3	-65.6	85.8
62122	ALL	DIRN.	SUR	65	0	0	68.7	-67.2	96.1

AVAILABILITY – SHIP/SYNOP – MARCH 1996
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 18152

FIGURE 1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7 4 0 8 16 8 21 19 7 42 50 25 166 204 201 84 70 30 45 15 18 12 6 19 29 16 9 15 8 6
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8 7 8 9 13 46 13 16 39 54 73 52 19 21 24 32 293 388 625 442 183 81 40 69 59 85 51 69 134 189 130 72 20 10 8
6 6 6 7 10 22 14 8 8 23 38 24 19 22 22 28 37 203 161 133 136 166 91 87 56 51 15 81 171 233 256 132 39 16 11 8
5 5 15 7 4 3 23 58 26 42 130 23 15 11 5 3 65 4 22 8 19 74 48 187 36 69 78 89 196 224 96 22 13 6 4 3
1 2 6 2 2 2 2 19 68 53 55 113 14 5 3 13 97 70 51 19 1 11 43 22 10 74 18 79 156 42 72 8 9 2 5 1
0 2 4 2 0 0 0 2 3 14 48 27 30 9 4 8 20 48 48 24 10 43 11 3 6 41 30 66 32 56 48 10 7 12 11 10
4 3 5 1 4 1 1 2 3 22 52 29 23 65 59 3 6 10 2 18 3 66 9 5 2 12 2 1 65 98 62 10 40 20 10 9
39 17 9 12 1 1 1 1 0 1 36 51 30 99 35 3 1 3 8 12 48 52 43 17 5 1 2 6 4 4 65 114 96 14 26 33
11 2 12 9 8 1 0 3 0 0 22 46 105 90 4 1 1 1 5 42 91 53 23 14 1 1 0 1 4 111 30 73 155 147 28 4
2 1 1 1 1 0 0 0 1 1 24 70 88 2 2 2 2 2 2 27 60 6 2 2 1 5 1 1 1 99 42 128 322 132 14 11
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0 0 0 0 0 11 13 6 3 7 0 0 0 2 1 2 2 0 0 0 1 5 0
0 1 1 36 4 0 0 1 1 0 4 2 3 5 0 3 0 3 1 1 4 1
0 0 1 0 4 2 1 5 2

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

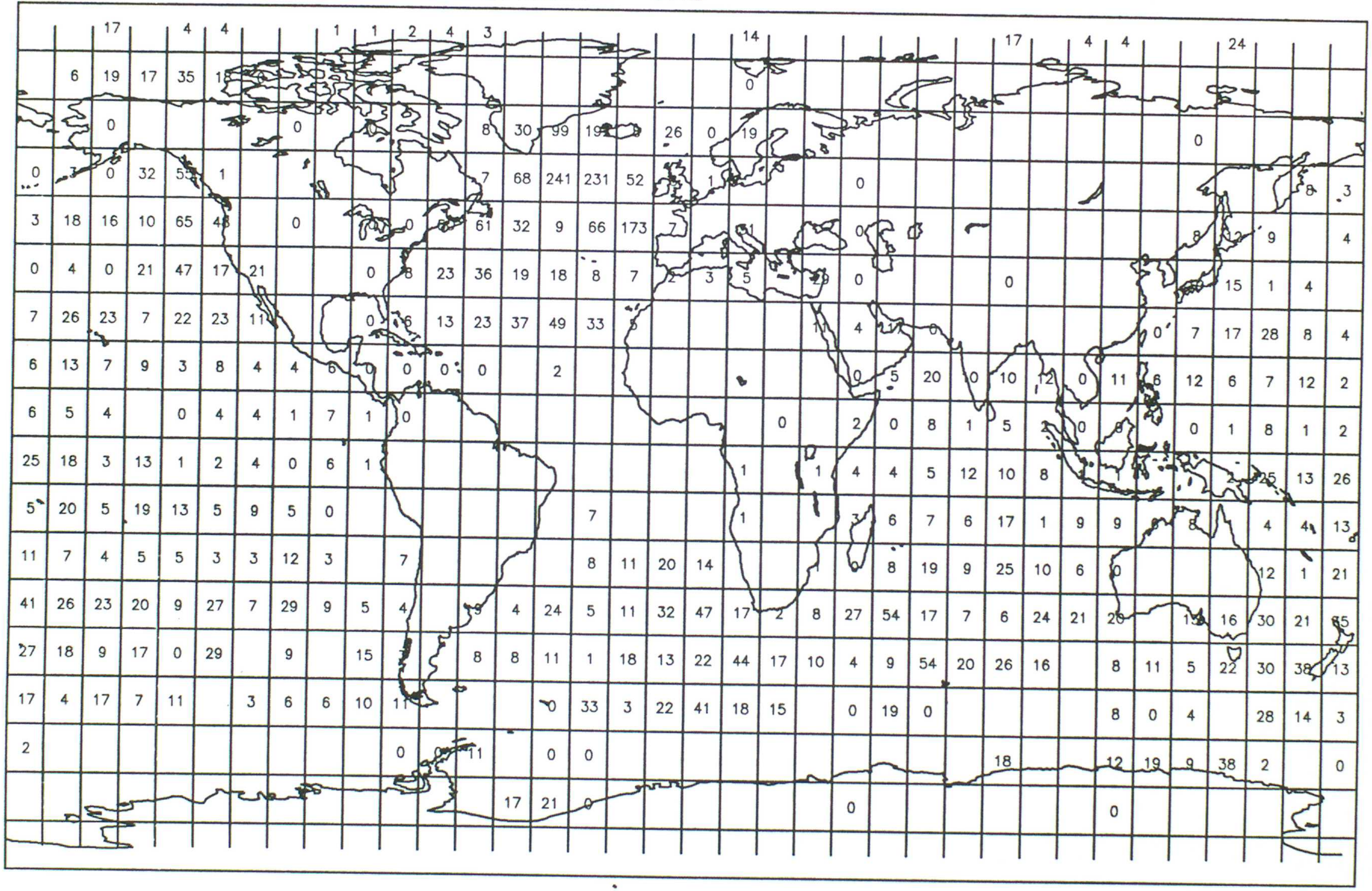
Period		:One calendar month.	
Data monitored		:Reports from each unique identifier for drifting buoys.	
Standard of comparison		:Background field from Bracknell global model.	
Position		:Average latitude and longitude for period.	
Observation times		:00, 06, 12, 18 UTC	
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).	
Parameters monitored			
	:NOBS	:Number of observations received excluding duplicates.	
	:NGE	:Number of observations with gross errors.	
	:PGE	:Percentage of observations with gross errors.	
	:SD	:SD of difference of observations from background values excluding those with gross errors.	
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**	
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.	
GROSS ERROR LIMIT	:15 hPa	(pressure)	
	:25 m s^{-1}	(vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.¦bias¦	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
25547	87.9	-76.6	ALL	MSLP	SUR	198	0	0	3.6	-4.7	5.9
33535	-38.8	55.9	ALL	MSLP	SUR	509	55	11	6.6	0.6	6.6
44761	56.0	-44.1	ALL	MSLP	SUR	466	241	52	4.5	-1.4	4.8
62507	46.9	-18.1	ALL	MSLP	SUR	21	0	0	4.4	-5.5	7.0
WIND SPEED											
46558	41.5	-140.1	ALL	SPEED	SUR	37	0	0	2.7	-9.3	9.7
56526	-17.7	109.4	ALL	SPEED	SUR	108	53	49	3.9	2.8	4.8
62505	47.0	-19.3	ALL	SPEED	SUR	321	12	4	5.8	8.0	9.9
62506	49.4	-20.1	ALL	SPEED	SUR	126	0	0	2.7	-5.0	5.7
WIND DIRECTION											
46557	36.7	-146.6	ALL	DIRN.	SUR	168	0	0	39.3	-33.2	51.4
46558	41.5	-140.1	ALL	DIRN.	SUR	36	0	0	16.7	-37.5	41.0
55588	-45.1	152.9	ALL	DIRN.	SUR	167	0	0	86.5	-70.9	111.8

AVAILABILITY – DRIBU – MARCH 1996
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5062

FIGURE 2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6 19 17 35 18 0
0 0 0 8 30 99 19 26 0 19 0
0 3 0 32 53 1 7 68 241 231 52 1 0 8 3
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0 4 0 21 47 17 21 0 8 23 36 19 18 8 7 2 3 5 29 0 0 0 15 1 4
7 26 23 7 22 23 11 0 6 13 23 37 49 33 5 11 4 17 0 0 7 17 28 8 4
6 13 7 9 3 8 4 4 6 0 0 0 0 2 0 5 20 0 10 12 0 11 6 12 6 7 12 2
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25 18 3 13 1 2 4 0 6 1 1 1 4 4 5 12 10 8 1 25 13 26
5 20 5 19 13 5 9 5 0 7 1 3 6 7 6 17 1 9 9 8 4 4 13
11 7 4 5 5 3 3 12 3 7 8 11 20 14 1 8 19 9 25 10 6 0 12 1 21
41 26 23 20 9 27 7 29 9 5 4 9 4 24 5 11 32 47 17 2 8 27 54 17 7 6 24 21 20 13 16 30 21 55
27 18 9 17 0 29 9 15 8 8 11 1 18 13 22 44 17 10 4 9 54 20 26 16 8 11 5 22 30 38 13
17 4 17 7 11 3 6 6 10 11 0 33 3 22 41 18 15 0 19 0 8 0 4 28 14 3
2 0 11 0 0 18 12 19 9 38 2 0
17 21 0 0 0

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	117	2	2	95	1.1	5.0	5.1
60468	35.6N	6.2E	1052	S8	67	66	99	0	0.0	-1.8	1.8
60511	35.3N	1.4E	1127	S8	106	104	98	0	1.2	13.3	13.4
60535	34.7N	3.3E	1144	S8	66	3	5	92	2.1	-5.9	6.3
60571	31.6N	2.2W	773	S8	108	0	0	18	1.4	-4.4	4.6
60670	24.6N	9.5E	1054	S8	107	2	2	97	1.3	8.4	8.5
61731	13.3N	14.2W	4	M	24	0	0	100	0.5	-4.7	4.7
63333	11.1N	39.7E	1916	MS	69	0	0	84	1.3	7.4	7.5
63453	8.8N	39.8E	1062	S	50	2	4	100	1.4	11.9	12.0
63478	5.1N	44.6E	320	MS	37	0	0	0	1.2	6.8	6.9
67877	18.2S	31.5E	1632	S8	73	5	7	0	2.0	11.2	11.4
68014	19.6S	18.1E	1411	S8	85	0	0	86	1.3	-5.9	6.0
68396	26.5S	31.3E	641	S8	45	0	0	71	1.1	4.9	5.0
68442	29.1S	26.3E	1354	S8	113	0	0	97	1.1	-5.4	5.5

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24382	66.4N	143.2E	196	MS	59	1	2	20	3.1	4.3	5.3
24671	63.9N	135.9E	402	M	66	0	0	0	4.7	5.2	7.0
30554	54.5N	113.6E	995	MS	58	0	0	100	1.0	11.2	11.2
40700	39.6N	48.1E	45	MS	27	0	0	56	1.5	-4.3	4.6
40701	39.3N	44.4E	1470	MS	93	1	1	99	1.2	7.4	7.5
40723	37.5N	57.3E	1074	MS	27	0	0	4	1.2	-4.5	4.7
40727	36.3N	46.3E	1493	MS	26	1	4	46	1.1	-4.5	4.6
40743	36.2N	57.7E	941	MS	116	0	0	22	1.5	-4.8	5.0
40762	35.3N	59.2E	1333	MS	116	39	34	0	1.0	-13.4	13.4
40763	35.2N	58.5E	1060	MS	45	0	0	31	1.7	-5.1	5.4
40783	32.4N	49.7E	1972	MS	94	0	0	85	1.5	-6.7	6.9
40789	33.8N	55.1E	921	MS	61	0	0	98	1.5	9.3	9.4
40818	31.2N	52.7E	2004	MS	95	1	1	16	1.4	-4.2	4.4
40836	30.8N	51.7E	1880	MS	76	1	1	97	1.4	9.1	9.2
40859	29.0N	53.7E	1383	MS	89	0	0	100	2.8	9.5	9.9
41244	24.2N	55.8E	299	M	38	0	0	0	1.5	7.6	7.7
41254	23.1N	57.7E	1755	S8	85	85	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	23	0	0	61	1.7	7.2	7.4
44232	49.4N	102.7E	933	MS	73	1	1	58	2.1	-5.5	5.9
44277	46.4N	96.3E	2147	MS	94	0	0	46	1.8	-6.0	6.3
44292	47.9N	107.0E	1338	MS	95	0	0	59	1.7	4.4	4.7
44477	27.0N	87.4E	1445	S8	60	60	100	0	0.0	0.0	0.0
47022	40.8N	128.2E	1206	S	112	2	2	55	1.3	5.2	5.4
51334	44.6N	82.9E	321	M	121	1	1	0	2.5	4.4	5.1
52602	38.8N	93.4E	2734	S	121	0	0	20	2.6	-6.7	7.2
56287	30.0N	103.0E	629	M	119	0	0	0	3.1	5.9	6.7
56385	29.5N	103.3E	3049	S	123	0	0	31	1.6	-4.6	4.9
56444	28.5N	98.9E	3488	S	114	114	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	104	0	0	99	2.5	8.2	8.6
57006	34.6N	105.8E	1143	M	121	1	1	2	2.8	4.7	5.5

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	M	39	0	0	0	1.5	-6.9	7.1
80234	4.2N	73.6W	431	MS	45	0	0	2	1.9	4.1	4.5
80431	9.9N	67.3W	429	MS	27	0	0	26	1.3	-4.1	4.3
82704	7.6S	72.7W	170	MS	68	0	0	3	2.9	-4.5	5.4
83214	10.3S	54.9W	285	MS	31	0	0	3	2.1	-5.2	5.6
83235	12.4S	46.4W	660	MS	68	2	3	96	1.1	6.9	7.0
83295	13.4S	39.9W	755	MS	26	1	4	62	0.7	-4.4	4.5
83319	14.7S	52.4W	315	MS	34	0	0	0	1.4	-4.3	4.5

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83332	14.1S	46.4W	950	MS	64	21	33	0	1.3	13.6	13.7
83408	14.3S	43.8W	556	MS	64	1	2	100	1.3	11.3	11.4
83423	16.7S	49.3W	729	MS	69	0	0	86	1.0	-5.1	5.2
83488	17.8S	42.9W	1097	MS	60	60	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	55	0	0	73	0.9	-6.4	6.5
83587	19.9S	43.9W	850	MS	68	0	0	99	0.9	-7.6	7.7
83689	21.3S	43.8W	1171	MS	50	1	2	92	0.8	4.6	4.7
83704	22.3S	53.9W	369	MS	55	0	0	51	4.8	-6.0	7.7
83836	25.5S	50.6W	837	MS	76	0	0	34	1.8	-4.5	4.8
83916	28.2S	51.5W	806	MS	62	0	0	50	2.0	-4.9	5.3
84455	6.5S	76.4W	282	MS	122	0	0	12	2.5	7.5	7.9
84472	7.1S	78.5W	2622	S	36	1	3	78	1.8	-5.0	5.3
84542	9.4S	77.6W	2760	S	48	1	2	23	2.3	5.5	6.0
84686	13.6S	72.0W	3249	S	121	1	1	1	1.7	-5.3	5.6
84782	18.1S	70.3W	469	MS	118	0	0	6	1.5	6.9	7.1
85312	19.8S	63.9W	992	S	32	0	0	84	1.4	-5.2	5.4
85406	18.3S	70.3W	58	M	119	0	0	3	1.6	4.8	5.1
88903	54.3S	36.5W	3	M	28	0	0	36	3.3	-5.5	6.4

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71094	66.6N	61.6W	393	MS	115	0	0	0	1.7	-4.1	4.4
71096	67.6N	63.8W	573	MS	108	0	0	25	2.7	-4.3	5.1
71917	80.0N	85.9W	10	MS	123	0	0	0	2.8	4.3	5.1
76118	30.4N	109.7W	1040	MS	45	1	2	100	1.0	-11.1	11.1
76160	29.1N	111.0W	211	MS	41	0	0	2	1.6	-4.5	4.8
76539	22.1N	101.0W	1871	MS	90	0	0	68	1.2	-4.5	4.7
76632	20.1N	98.7W	2417	MS	49	0	0	57	0.9	-5.8	5.9
76634	20.1N	98.4W	2135	MS	93	0	0	63	1.6	-5.6	5.8
76658	19.2N	103.7W	494	MS	31	0	0	0	1.5	6.0	6.2
76726	18.9N	99.3W	1560	MS	87	0	0	99	1.5	-7.6	7.7
76762	17.5N	99.5W	1360	MS	87	1	1	100	1.2	12.0	12.1
76848	16.3N	92.1W	1530	MS	104	8	8	63	0.9	-13.4	13.4

WMO REGION 5:

NO SUSPECTS IN THIS REGION

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.6N	9.7E	630	MS	92	1	1	96	1.1	-5.4	5.5
03226	54.6N	2.4W	227	M	84	45	54	12	1.0	-0.1	1.0
08221	40.5N	3.6W	633	MS	120	0	0	99	1.0	6.1	6.2
11024	48.4N	15.4E	860	S8	118	47	40	0	0.7	-13.8	13.8
11346	47.3N	12.8E	917	S8	92	0	0	57	1.5	-4.0	4.3
16020	46.5N	11.3E	1461	MS	62	62	100	0	0.0	0.0	0.0
16227	41.9N	13.6E	655	MS	122	107	88	35	0.6	-14.1	14.1
16614	40.4N	21.3E	604	MS	117	1	1	98	1.5	-6.8	7.0

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89208	90.0S	0.0W	2835	S7	84	84	100	0	0.0	0.0	0.0
89266	72.2S	60.3W	91	MS	83	54	65	0	6.0	-5.2	7.9
89705	81.5S	3.7E	2410	S7	47	47	100	0	0.0	0.0	0.0
89757	73.8S	55.7E	2775	S	101	101	100	0	0.0	0.0	0.0

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89803	68.5S	102.2E	2118	S7	49	5	10	80	1.9	-10.9	11.1
89834	67.4S	138.7E	1560	S	68	68	100	0	0.0	0.0	0.0
89847	67.6S	146.0E	30	MS	79	3	4	1	2.6	-8.0	8.4
89860	74.2S	160.3E	1772	S8	78	0	0	37	2.2	-7.7	8.0
89863	74.9S	163.1E	30	MS	81	1	1	6	3.8	-4.0	5.5
89865	76.2S	168.7E	275	MS	80	71	89	0	3.0	11.3	11.7
89868	79.9S	169.8E	60	MS	84	84	100	0	0.0	0.0	0.0

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:All hours combined.
Level(s) monitored		:70.0 - 500.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP ≥ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	161	2	2	1.8	1.2	159	0	0	0	6.9	1.8
AAL	5304	0	1	1.8	0.0	5343	0	2	0	8.4	1.0
AAN	194	1	1	2.0	-0.7	186	0	1	1	10.0	0.9
AAR	2026	0	1	2.0	0.0	2054	0	2	0	9.0	1.3
ACA	1394	0	1	2.0	0.0	1448	0	2	0	7.4	0.7
AEA	570	7	100	3.7	1.0	553	0	5	0	10.2	0.9
AEL	1021	1	3	2.0	-0.2	1043	0	3	0	8.9	1.0
AFL	199	2	100	3.2	1.6	199	0	7	1	11.8	0.5
AFR	1362	1	4	1.9	-0.3	1418	0	5	0	8.2	0.7
AIC	26	0	8	2.8	0.0	26	0	15	0	17.9	9.2
AIH	78	0	4	2.0	0.0	79	0	3	0	8.2	1.3
AMT	361	1	2	2.0	0.4	368	0	2	0	9.3	0.5
AMX	194	1	2	1.8	-0.2	201	1	4	0	9.2	0.0
AMY	156	0	4	2.0	-0.8	162	0	6	0	9.6	0.5
ANA	907	0	1	2.0	-0.2	913	0	2	0	9.0	1.4
ANO	37	0	0	0.8	0.4	37	0	0	0	6.4	2.7
ANZ	2546	1	4	2.0	-0.2	2514	0	4	1	8.2	1.5
AOM	696	1	2	1.9	0.7	714	0	2	0	8.4	1.6
ARP	52	0	2	1.6	0.6	51	0	2	0	8.7	3.7
ATN	55	0	4	2.6	0.4	55	2	100	2	19.2	1.5
AUA	96	1	10	2.2	-0.6	97	0	10	0	7.6	1.4
AVA	376	1	5	2.0	-0.1	384	0	6	0	10.4	2.0
AVN	34	0	0	1.2	0.6	34	0	0	0	6.6	1.7
AZA	451	3	7	2.3	0.2	463	0	4	0	8.3	0.6
BAL	329	1	12	2.0	0.0	329	0	13	0	8.8	1.2
BAW	1389	0	3	1.9	-0.2	1411	0	4	0	8.0	1.1
BBB	44	0	0	1.4	-0.1	45	0	0	0	7.9	1.3
BBC	22	5	23	4.3	1.9	22	0	9	0	5.3	1.2
BWA	439	1	3	2.2	1.2	452	0	4	0	7.9	1.6
CAL	1802	1	1	2.1	0.0	1813	0	2	0	9.3	1.0
CCA	156	1	92	3.2	0.3	178	0	92	0	11.3	1.4
CDN	2578	0	1	1.9	0.3	2594	0	2	0	8.4	1.1
CES	154	1	3	2.4	0.6	156	2	59	0	12.0	0.2
CFG	1208	1	1	2.1	-1.0	1239	0	2	0	7.9	0.9
CKS	146	3	10	3.4	1.9	148	0	6	0	10.7	1.4
CKT	80	1	3	1.3	0.5	82	0	4	0	6.9	1.3
CLX	120	1	2	1.6	-0.7	124	1	3	1	7.1	0.5
CMI	989	1	2	2.1	0.4	995	0	2	1	8.4	1.3
CMM	333	0	1	2.2	-0.4	333	1	2	0	9.5	1.2
COA	817	0	2	2.0	0.5	824	0	3	0	9.1	0.8
CPA	90	1	2	2.1	-0.6	94	0	1	0	9.3	1.6
CRL	570	1	1	1.8	0.3	575	0	2	0	8.7	1.9
CTM	71	0	8	2.5	-1.8	72	0	8	0	7.3	1.6
CUB	440	1	100	2.7	1.2	442	0	100	0	13.6	2.9
DAF	37	0	5	3.3	-2.2	37	0	5	0	11.6	1.2
DAL	5225	1	2	2.1	0.6	4860	0	2	0	8.6	1.0
DHL	431	1	100	3.6	-1.5	429	0	4	0	9.2	0.9
DLH	2522	0	7	2.3	0.7	2560	0	7	1	7.4	1.1
DOA	190	1	17	2.0	0.8	189	0	17	1	10.0	1.7
EHD	29	62	59	6.6	5.6	29	0	10	0	14.9	6.3
EIA	93	0	9	1.9	0.0	95	0	8	0	10.2	2.2
ELY	145	0	4	1.9	-0.4	154	0	7	0	8.8	0.4
EVA	1763	1	1	2.2	-0.6	1823	0	2	0	9.5	1.0
EWW	124	0	100	2.4	0.4	133	0	100	1	12.0	1.5
FDX	1436	1	2	2.1	0.8	1459	0	3	0	8.7	1.7
FIN	370	0	2	1.8	0.4	368	0	3	0	9.0	0.9
FJI	417	1	2	1.7	0.7	418	0	2	0	8.0	1.8
FNY	29	0	0	1.1	0.1	29	0	0	0	7.8	0.4
FOM	54	0	2	2.0	1.3	54	0	2	0	7.0	2.1

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GAF	63	0	0	1.8	0.6	63	0	2	2	6.7	1.1
GFA	20	0	5	1.4	-0.1	20	0	10	0	7.5	-0.1
GIA	195	4	3	1.7	0.1	199	0	3	0	9.2	1.8
GTI	74	0	3	2.0	-0.3	76	0	5	0	9.6	-0.1
HAL	1550	0	1	1.9	0.4	1555	0	2	0	10.2	0.7
HLA	22	0	0	2.0	0.0	22	0	14	0	15.3	5.5
HLF	118	2	4	2.5	-1.3	119	0	5	0	10.0	0.7
HRH	33	6	12	1.6	1.0	31	0	6	0	9.5	2.2
IBE	1889	1	15	2.4	0.0	1890	0	16	0	9.6	1.2
ICE	467	0	1	1.6	-0.4	464	0	2	0	8.4	0.8
JAA	48	0	4	2.5	1.0	47	0	2	0	7.4	2.3
JAL	6502	0	1	2.2	0.1	6550	0	2	0	8.9	1.2
JAS	26	0	0	1.8	1.2	27	0	0	0	6.8	2.0
JAZ	61	2	2	2.0	1.2	61	0	2	0	8.1	-0.6
KAC	21	0	0	1.5	-1.0	22	0	0	0	6.7	1.4
KAL	3490	1	1	2.2	0.0	3507	0	3	0	9.5	1.5
KIC	100	0	1	1.7	0.3	101	0	4	0	9.0	2.6
KLM	2235	0	2	1.8	0.2	2252	0	2	0	8.1	1.0
LDA	211	0	9	2.2	-1.2	217	0	11	0	7.7	-0.1
LDI	279	0	4	2.2	-1.5	285	0	4	0	7.9	0.6
LIB	723	1	3	1.9	0.7	731	0	5	0	9.2	1.3
LOT	192	1	1	1.9	-0.5	193	0	0	0	6.4	0.2
LTU	743	1	2	1.8	0.3	715	0	3	0	8.8	1.6
MAH	31	0	13	2.3	-1.6	33	0	12	0	6.7	1.8
MAS	286	1	1	2.0	-0.5	319	1	3	1	9.4	1.0
MDA	120	2	2	2.1	-0.4	122	0	3	1	8.1	1.4
MOU	22	0	0	3.1	2.1	24	0	4	0	6.5	1.0
MPH	755	1	2	2.0	-0.9	746	0	2	0	8.1	1.0
MRS	42	5	7	2.5	-1.0	41	0	7	2	11.9	4.8
NCA	689	0	0	2.1	0.8	690	0	2	0	9.2	1.0
NWA	10260	0	1	2.2	0.7	10292	0	2	0	8.8	1.1
OAL	40	0	8	2.2	1.6	43	0	5	0	7.4	3.2
OOE	24	0	8	3.1	2.5	26	0	12	0	8.9	3.8
PAC	76	0	1	1.8	0.7	79	0	3	0	6.6	1.0
PAL	1037	1	2	2.1	-0.4	1046	0	3	0	10.1	1.0
PAO	189	2	2	1.7	0.3	187	0	1	1	6.7	1.4
PNL	45	2	2	2.3	1.6	44	0	2	0	11.5	0.8
QFA	1153	1	3	1.6	0.1	1153	0	3	1	8.0	1.7
RAF	208	0	0	1.5	0.5	208	0	2	0	9.7	2.1
RIA	253	0	76	2.6	1.3	258	1	100	0	14.7	0.8
RJA	48	0	2	2.0	0.6	51	0	0	0	4.8	0.4
RKA	56	0	4	2.4	-0.9	55	0	0	0	8.8	2.0
RON	33	0	3	1.8	0.4	32	0	3	3	6.3	1.2
RRR	105	5	34	2.2	0.1	109	0	35	0	10.4	1.2
SAA	206	1	3	2.1	-0.8	207	0	2	1	8.7	1.3
SAB	78	0	1	1.8	-0.2	79	0	1	0	7.0	1.2
SAS	1059	0	1	1.7	-0.1	1059	0	2	0	8.3	0.8
SIA	1281	0	1	2.2	-0.6	1304	0	2	0	9.3	1.1
SLR	40	3	10	1.9	-0.9	39	0	13	0	9.5	2.3
SOL	51	0	0	0.9	0.5	50	0	4	4	6.4	1.1
SPP	89	0	11	1.8	-0.4	87	0	10	0	7.8	1.1
SVA	84	0	1	2.0	0.9	98	0	2	0	8.0	1.6
SVV	30	0	3	3.1	1.7	31	0	29	0	14.6	-4.6
SWR	157	1	1	2.0	0.4	162	0	4	1	10.0	0.9
TAP	646	1	7	2.1	-0.4	643	0	8	0	9.8	1.0
TEJ	86	0	23	1.8	0.0	86	0	28	0	12.6	1.1
THA	273	0	2	2.4	-0.5	286	1	4	0	10.7	1.3
TOW	88	0	2	1.9	-0.6	91	0	3	1	6.8	-0.3
TWA	1590	0	2	2.1	0.0	1590	0	2	0	8.6	1.1

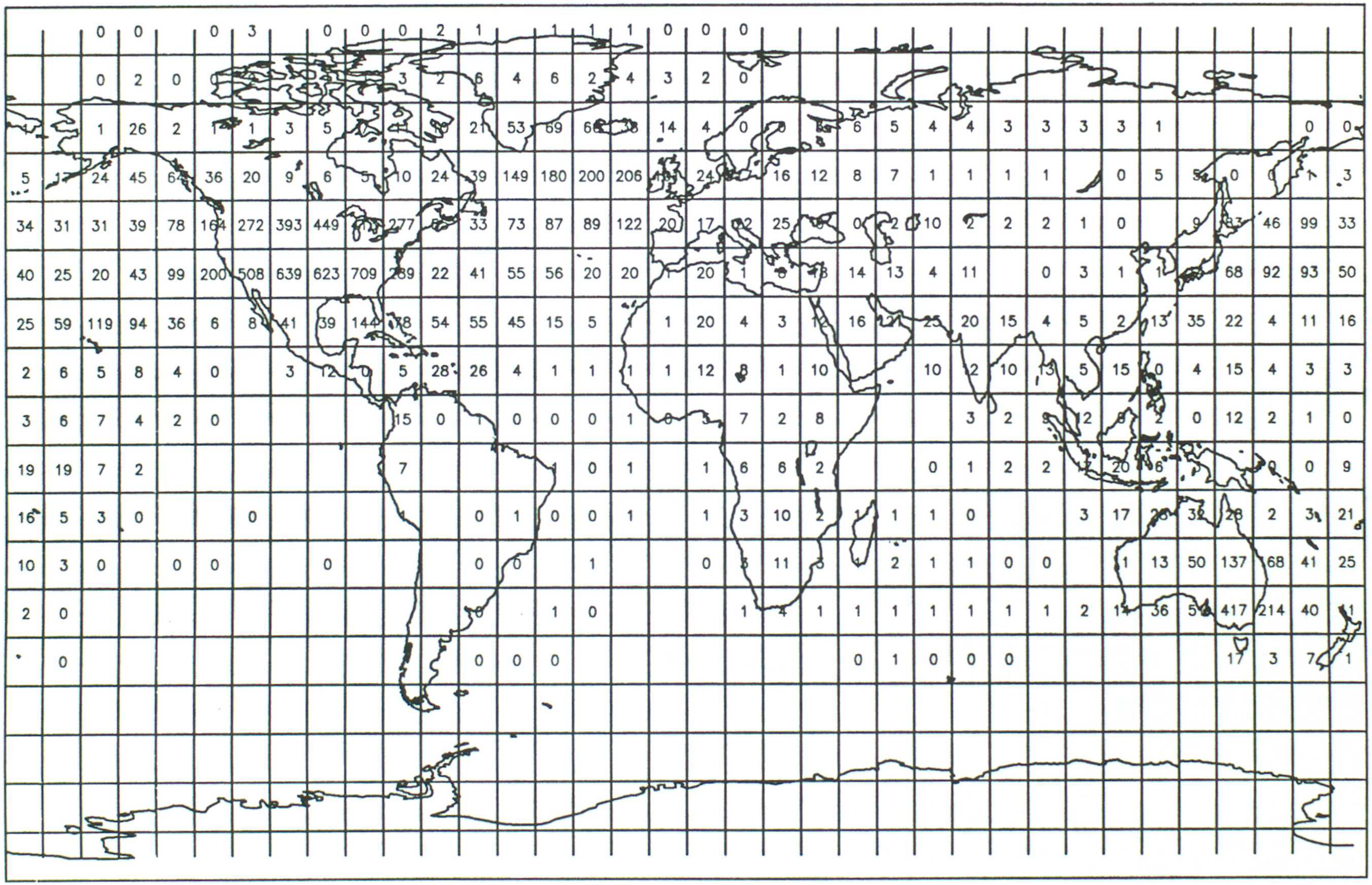
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
UAL	50297	1	3	1.8	0.1	50400	0	2	0	7.4	0.8
ULE	183	1	2	1.8	0.2	180	0	4	1	9.4	1.3
UPS	925	0	10	1.8	0.2	938	0	10	0	8.0	1.0
USA	138	0	1	1.9	-0.8	141	0	3	0	7.2	0.9
VIA	529	0	3	2.2	1.0	534	0	5	0	9.3	1.8
VIR	159	1	2	1.9	-0.3	169	0	2	0	7.0	0.1
VRG	59	0	3	2.2	0.5	61	0	3	0	9.4	3.7
VSP	176	1	3	2.3	0.5	186	0	3	0	8.5	0.6
WOA	142	0	8	2.2	0.7	144	0	8	0	7.3	1.8
AN	27638	0	1	1.2	0.1	27447	0	1	0	6.1	1.6
BA	21599	0	10	1.5	0.4	21546	0	15	0	6.6	1.2
DL	76245	0	3	1.8	0.1	76245	0	7	0	6.9	1.0
FJ	39	3	10	1.6	0.9	39	0	8	0	7.7	1.1
KL	13028	1	8	1.5	0.3	13024	0	8	0	7.1	1.7
LH	3005	0	1	1.4	0.2	2988	0	2	0	6.7	1.2
MF	54	0	6	2.4	-0.7	59	0	2	0	6.2	1.7
MR	24	0	0	1.5	-0.3	24	0	0	0	8.5	2.5
NW	23970	0	1	1.7	0.2	23970	0	1	0	6.3	0.8
QF	10454	0	1	1.3	0.2	10443	0	1	0	6.8	1.5
SA	1759	0	1	1.7	1.2	1753	0	100	0	8.6	1.7
SV	1353	0	5	1.8	0.9	1346	0	44	0	7.9	2.3
M	346	3	96	3.0	1.0	364	0	97	0	12.6	3.3
N	503	2	5	2.8	0.5	516	0	3	0	10.0	1.2

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA

FIGURE 3

MARCH 1996

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED


0 0 0 3 0 0 0 2 1 1 1 1 0 0 0
0 2 0 0 3 2 6 4 6 2 4 3 2 0
1 26 2 1 1 3 5 21 53 69 66 14 4 0 6 5 4 4 3 3 3 3 1 0 0
5 17 24 45 64 36 20 9 6 5 10 24 39 149 180 200 206 24 16 12 8 7 1 1 1 1 0 5 5 0 0 1 3
34 31 31 39 78 164 272 393 449 277 33 73 87 89 122 20 17 25 0 2 10 2 2 2 1 0 9 46 99 33
40 25 20 43 99 200 508 639 623 709 289 22 41 55 56 20 20 20 1 14 13 4 11 0 3 1 1 68 92 93 50
25 59 119 94 36 6 8 41 39 144 78 54 55 45 15 5 1 20 4 3 12 16 21 25 20 15 4 5 2 13 35 22 4 11 16
2 6 5 8 4 0 3 12 0 5 28 26 4 1 1 1 1 12 8 1 10 10 12 10 13 5 15 0 4 15 4 3 3
3 6 7 4 2 0 15 0 1 0 0 0 1 0 3 7 2 8 3 2 9 12 8 2 0 12 2 1 0
19 19 7 2 7 1 0 1 1 6 6 2 0 1 2 2 17 20 6 0 0 9
16 5 3 0 0 0 1 0 0 1 1 3 10 2 1 1 1 0 3 17 28 32 28 2 3 21
10 3 0 0 0 0 0 0 1 0 3 11 3 1 2 1 1 0 0 1 13 50 137 168 41 25
2 0 0 1 0 1 4 1 1 1 1 1 1 1 2 14 36 56 417 214 40 11
0 0 0 0 0 1 0 0 0 17 3 7 1

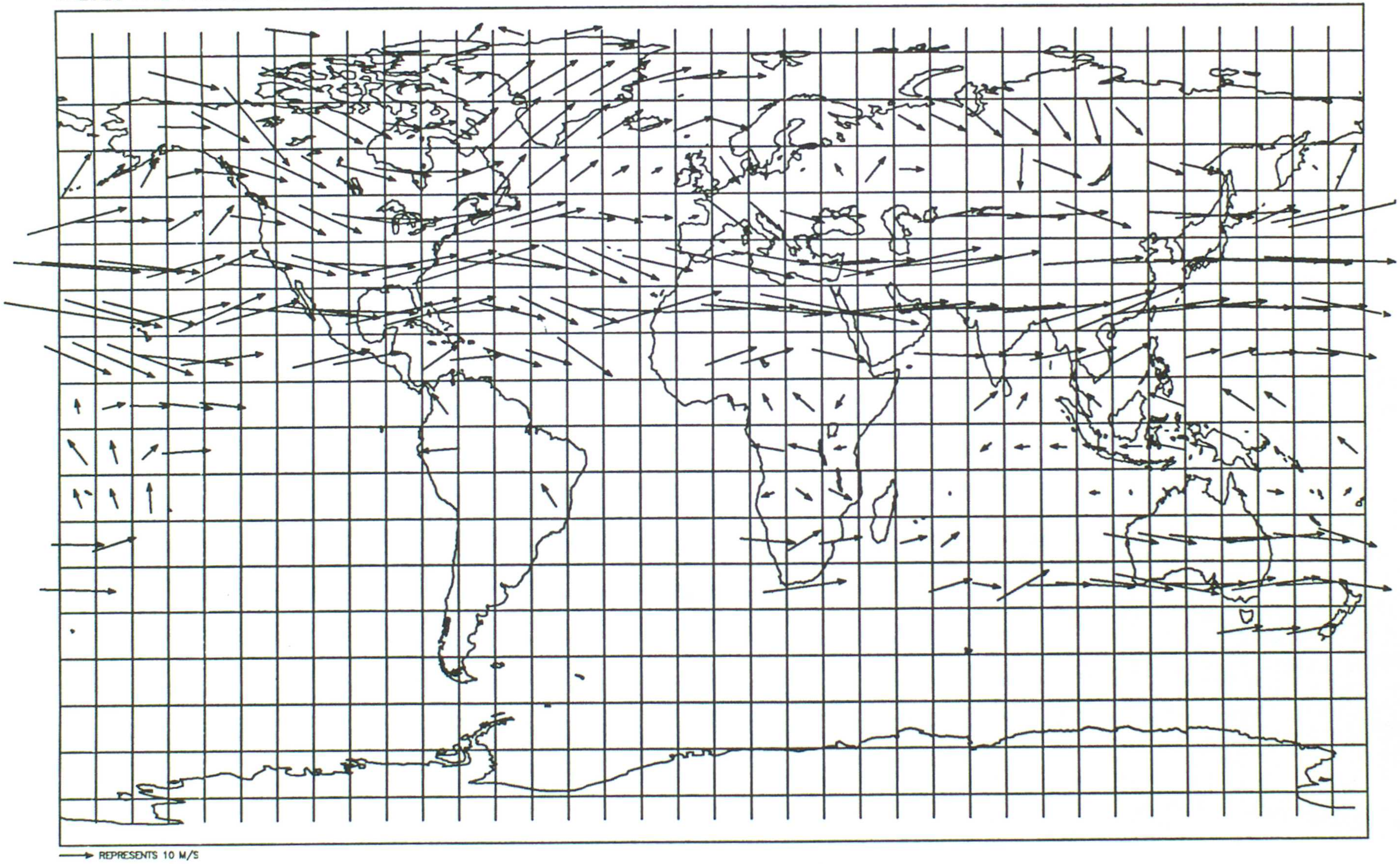
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA

FIGURE 4

MARCH 1996

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



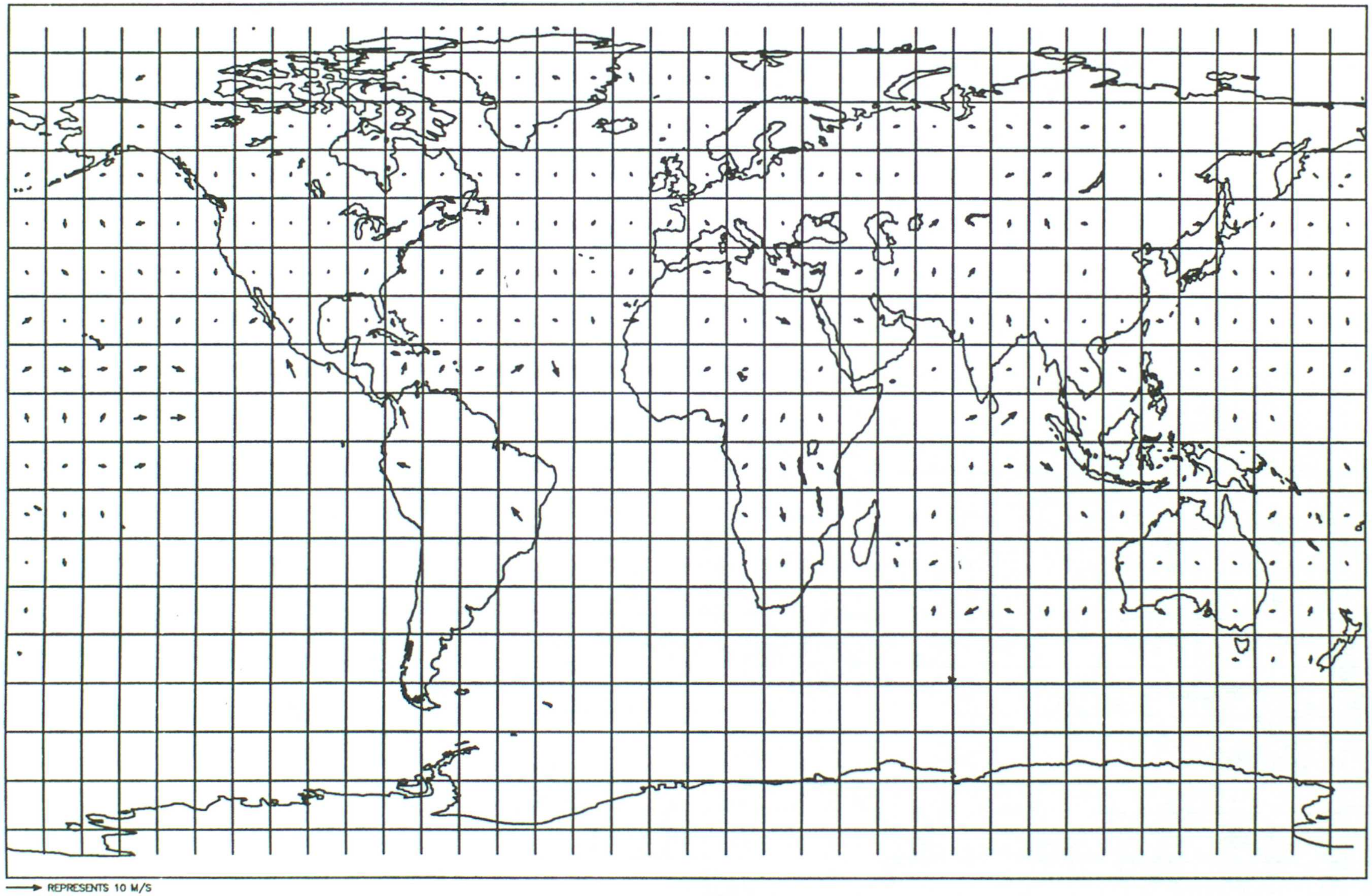
AIRCRAFT MEAN O–B WINDS BETWEEN 70 AND 500 HPA

FIGURE 5

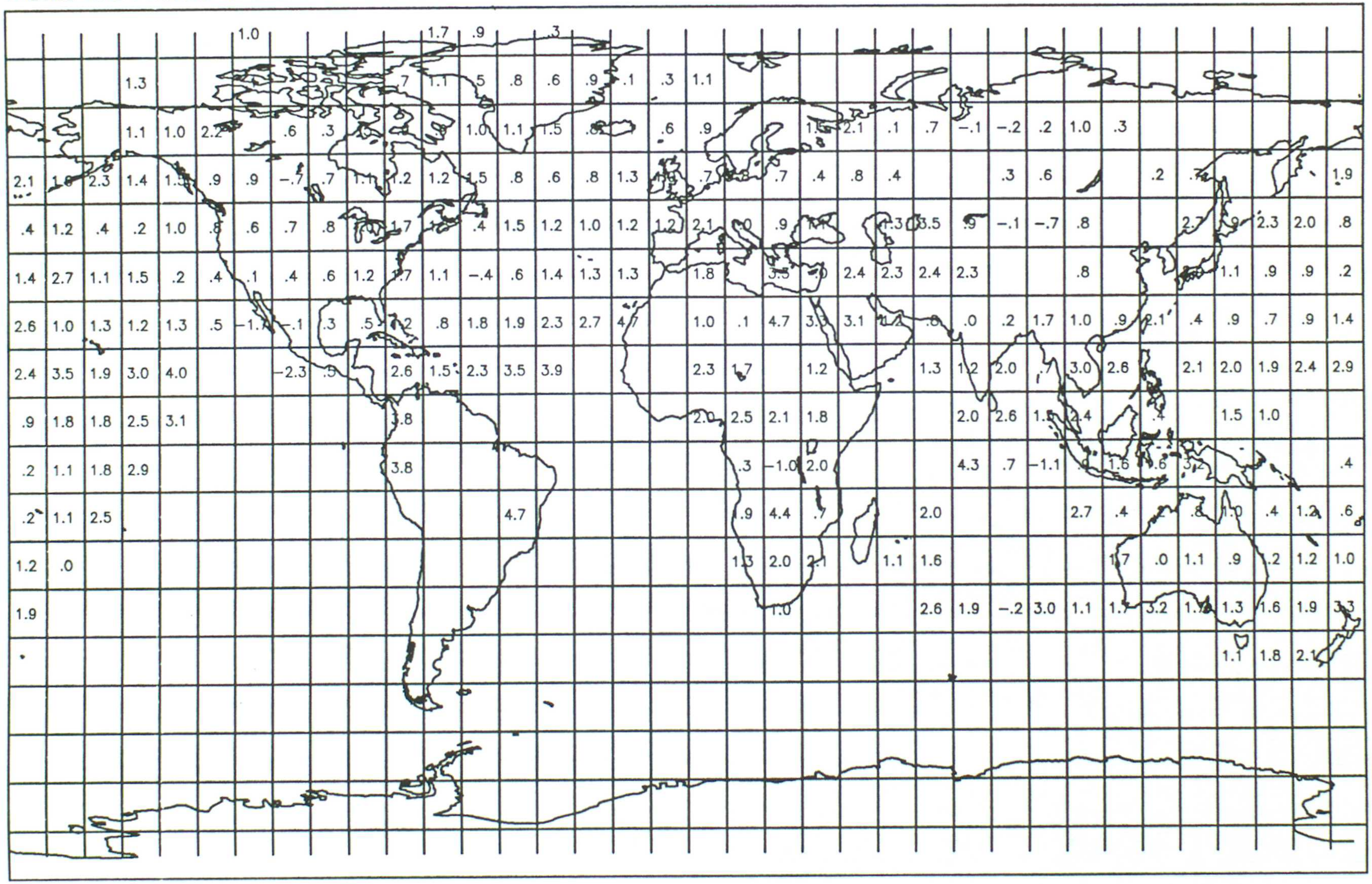
MARCH 1996

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O-B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
MARCH 1996
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


1.0 1.7 .9 .3
1.3 .7 1.1 .5 .8 .6 .9 .1 .3 1.1
1.1 1.0 2.2 .6 .3 .8 1.0 1.1 1.5 .8 .6 .9 1.5 2.1 .1 .7 −.1 −.2 .2 1.0 .3
2.1 1.8 2.3 1.4 1.5 .9 .9 −.7 .7 1.1 1.2 1.2 1.5 .8 .6 .8 1.3 1.3 .7 .8 .7 .4 .8 .4 .3 .6 .2 .7 1.9
.4 1.2 .4 .2 1.0 .8 .6 .7 .8 1.0 1.7 .4 1.5 1.2 1.0 1.2 1.2 2.1 .0 .9 1.1 1.3 3.5 .9 −.1 −.7 .8 2.7 .9 2.3 2.0 .8
1.4 2.7 1.1 1.5 .2 .4 .1 .4 .6 1.2 1.7 1.1 −.4 .6 1.4 1.3 1.3 1.8 3.5 .0 2.4 2.3 2.4 2.3 .8 1.0 1.1 .9 .9 .2
2.6 1.0 1.3 1.2 1.3 .5 −1.7 −.1 .3 .5 .2 .8 1.8 1.9 2.3 2.7 4.7 1.0 .1 4.7 3.3 3.1 1.2 .8 .0 .2 1.7 1.0 .9 2.1 .4 .9 .7 .9 1.4
2.4 3.5 1.9 3.0 4.0 −2.3 .5 2.6 1.5 2.3 3.5 3.9 2.3 1.7 1.2 1.3 1.2 2.0 .7 3.0 2.6 2.1 2.0 1.9 2.4 2.9
.9 1.8 1.8 2.5 3.1 .8 2.0 2.5 2.1 1.8 2.0 2.6 1.5 2.4 .4 1.5 1.0
.2 1.1 1.8 2.9 3.8 .3 −1.0 2.0 4.3 .7 −1.1 .1 1.6 .6 3.2 .4
.2 1.1 2.5 4.7 .9 4.4 .7 2.0 2.7 .4 .2 .8 1.0 .4 1.2 .6
1.2 .0 1.3 2.0 2.1 1.1 1.6 1.7 .0 1.1 .9 1.2 1.2 1.0
1.9 1.0 2.6 1.9 −.2 3.0 1.1 1.7 3.2 1.7 1.3 1.6 1.9 3.3
1.1 1.8 2.1

AIRCRAFT : RMS O–B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
MARCH 1996
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

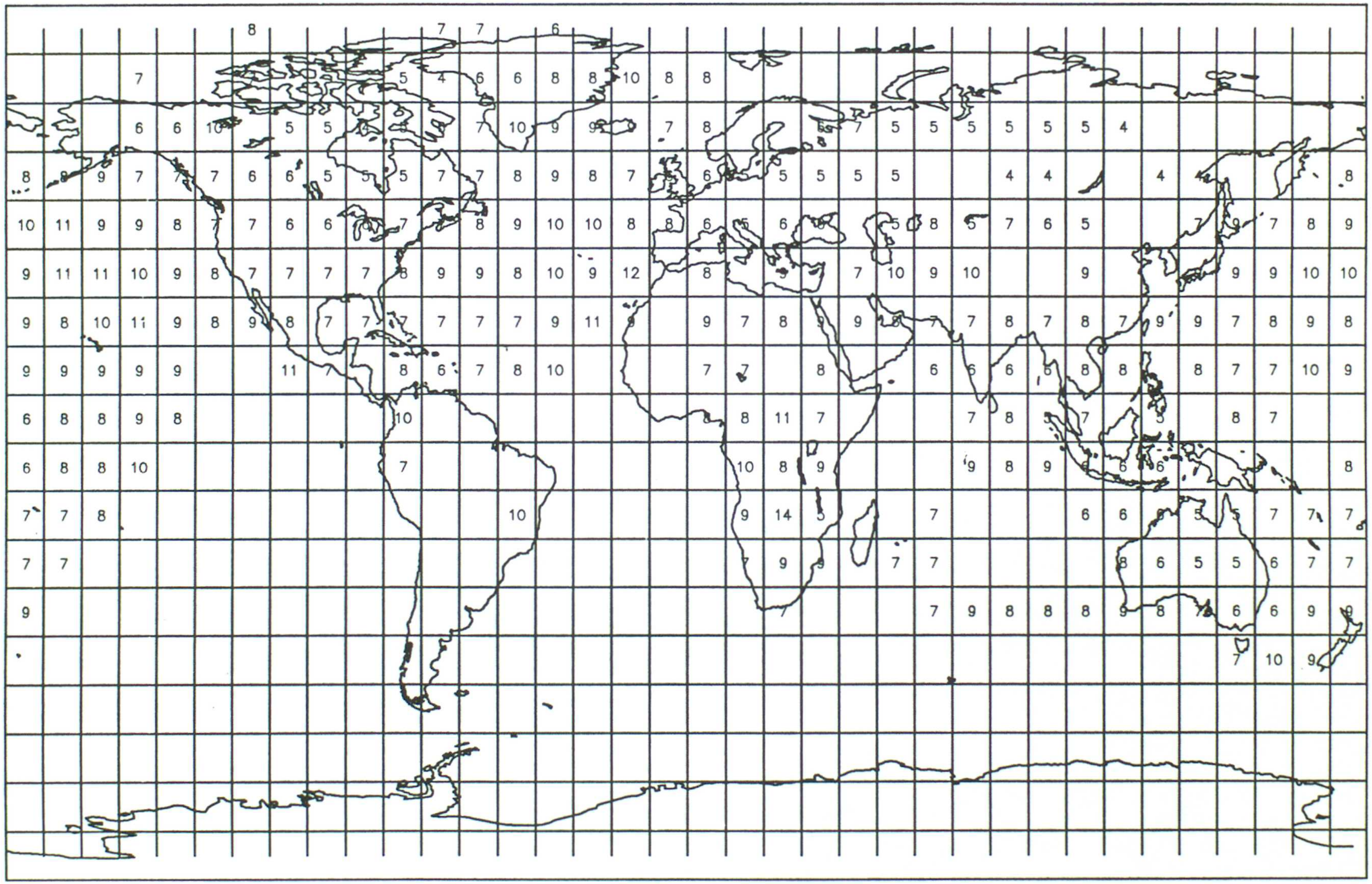

8 7 7 6
7 5 4 6 6 8 8 10 8 8
6 6 10 5 5 7 10 9 9 7 8 7 5 5 5 5 5 5 4
8 8 9 7 7 7 6 6 5 5 5 7 7 8 9 8 7 6 5 5 5 5 4 4 4 8
10 11 9 9 8 7 7 6 6 7 8 9 10 10 8 8 6 5 6 5 8 5 7 6 5 7 9 7 8 9
9 11 11 10 9 8 7 7 7 7 8 9 9 8 10 9 12 8 7 10 9 10 9 9 9 10 10
9 8 10 11 9 8 9 8 7 7 7 7 7 7 9 11 9 9 7 8 9 9 8 7 7 8 7 8 7 9 9 7 8 9 8
9 9 9 9 9 11 7 8 6 7 8 10 7 7 8 6 6 6 6 8 8 8 7 7 10 9
6 8 8 9 8 10 8 11 7 7 8 7 7 8 7
6 8 8 10 7 10 8 9 9 8 9 6 6 6 8
7 7 8 10 9 14 5 7 6 6 6 5 5 7 7 7
7 7 7 9 9 7 7 8 6 5 5 6 7 7
9 7 9 8 8 8 9 8 7 6 6 9 9
7 10 9

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
22217	12	Z	200	67/ 32	31	0	25.2	72.6	76.9	4
23933	12	Z	200	61/ 69	20	0	42.5	93.4	102.6	8
37018	12	Z	250	44/ 39	24	0	17.2	95.0	96.5	9
41780	00	Z	100	25/ 67	10	2	131.7	96.2	163.1	4
42339	00	Z	200	26/ 73	19	0	70.1	-133.5	150.8	6
42369	00	Z	70	27/ 81	15	2	156.4	93.9	182.4	6
42369	12	Z	100	27/ 81	15	3	125.9	74.2	146.1	6
42379	12	Z	200	27/ 83	20	0	72.8	-33.7	80.2	4
42667	12	Z	150	23/ 77	15	0	104.3	25.7	107.4	4
42809	00	Z	70	23/ 88	15	1	138.3	28.9	141.3	5
42971	12	Z	50	20/ 86	13	0	177.8	23.5	179.3	6
43014	00	Z	200	20/ 75	20	0	64.1	-82.7	104.6	5
43014	12	Z	100	20/ 75	13	0	95.7	-115.8	150.3	5
43041	00	Z	70	19/ 82	13	2	159.6	-37.2	163.9	7
43041	12	Z	150	19/ 82	15	0	78.4	-73.5	107.5	4
43128	00	Z	250	17/ 78	19	2	70.4	-90.7	114.8	10
43128	12	Z	30	17/ 78	15	1	150.9	205.8	255.2	7
43185	00	Z	150	16/ 81	24	0	68.7	-66.2	95.4	4
43192	00	Z	150	15/ 74	21	1	73.7	-100.9	124.9	6
43279	00	Z	150	13/ 80	26	0	57.1	-88.4	105.3	5
43285	12	Z	30	13/ 75	11	1	99.8	282.6	299.7	6
43346	12	Z	30	11/ 80	26	0	86.4	194.1	212.5	4
43353	00	Z	150	10/ 76	18	0	90.8	-79.4	120.6	5
43369	00	Z	150	8/ 73	15	1	86.3	-88.1	123.3	7
43371	00	Z	70	8/ 77	21	1	143.5	-170.5	222.9	9
43371	12	Z	30	8/ 77	15	1	188.2	74.9	202.6	10
44373	12	Z	150	44/ 104	7	5	79.1	175.6	192.5	5
54161	00	Z	200	44/ 125	28	0	30.6	70.1	76.5	6
54497	00	Z	70	40/ 124	26	0	89.0	112.9	143.8	6
54497	12	Z	200	40/ 124	28	0	34.6	73.3	81.1	6
55591	12	Z	70	30/ 91	20	0	82.6	164.3	184.0	8
56739	12	Z	100	25/ 98	30	0	41.0	123.8	130.4	5
56964	12	Z	70	23/ 101	24	0	38.0	133.1	138.4	4
56985	00	Z	70	23/ 103	30	0	39.4	151.8	156.8	5
56985	12	Z	70	23/ 103	27	0	36.3	157.8	161.9	4
57494	12	Z	70	31/ 114	27	0	41.7	129.8	136.3	6
57972	00	Z	70	26/ 113	29	0	43.8	133.6	140.6	4
58027	00	Z	30	34/ 117	28	0	65.0	172.4	184.3	4
58150	00	Z	70	34/ 120	27	0	29.0	121.5	124.9	4
58424	00	Z	100	31/ 117	31	0	30.1	100.7	105.1	4
58606	00	Z	100	29/ 116	31	0	51.2	108.5	120.0	4
58725	00	Z	30	27/ 117	18	0	40.6	179.1	183.7	4
59211	12	Z	70	24/ 107	26	0	74.5	108.6	131.7	4
59758	12	Z	70	20/ 110	27	0	39.6	144.2	149.6	4
60360	12	Z	250	37/ 8	3	8	137.8	41.7	143.9	6
60490	12	Z	500	36/ -1	11	15	49.3	-87.7	100.6	9
62306	00	Z	70	31/ 27	19	2	124.3	154.2	198.0	4
62306	12	Z	50	31/ 27	9	6	75.3	316.9	325.7	9
62378	12	Z	50	30/ 31	7	4	61.8	294.9	301.3	7
68240	12	Z	200	-24/ 26	16	0	96.6	5.1	96.8	7
82332	12	Z	50	-3/ -60	13	0	54.6	136.2	146.7	5
83208	12	Z	30	-13/ -60	10	0	53.5	173.8	181.8	4
96163	00	Z	150	-1/ 100	20	0	47.0	-98.5	109.1	5
96237	00	Z	250	-2/ 106	22	0	45.2	-74.1	86.8	6

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – MARCH 1996

FIGURE 8

ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1379

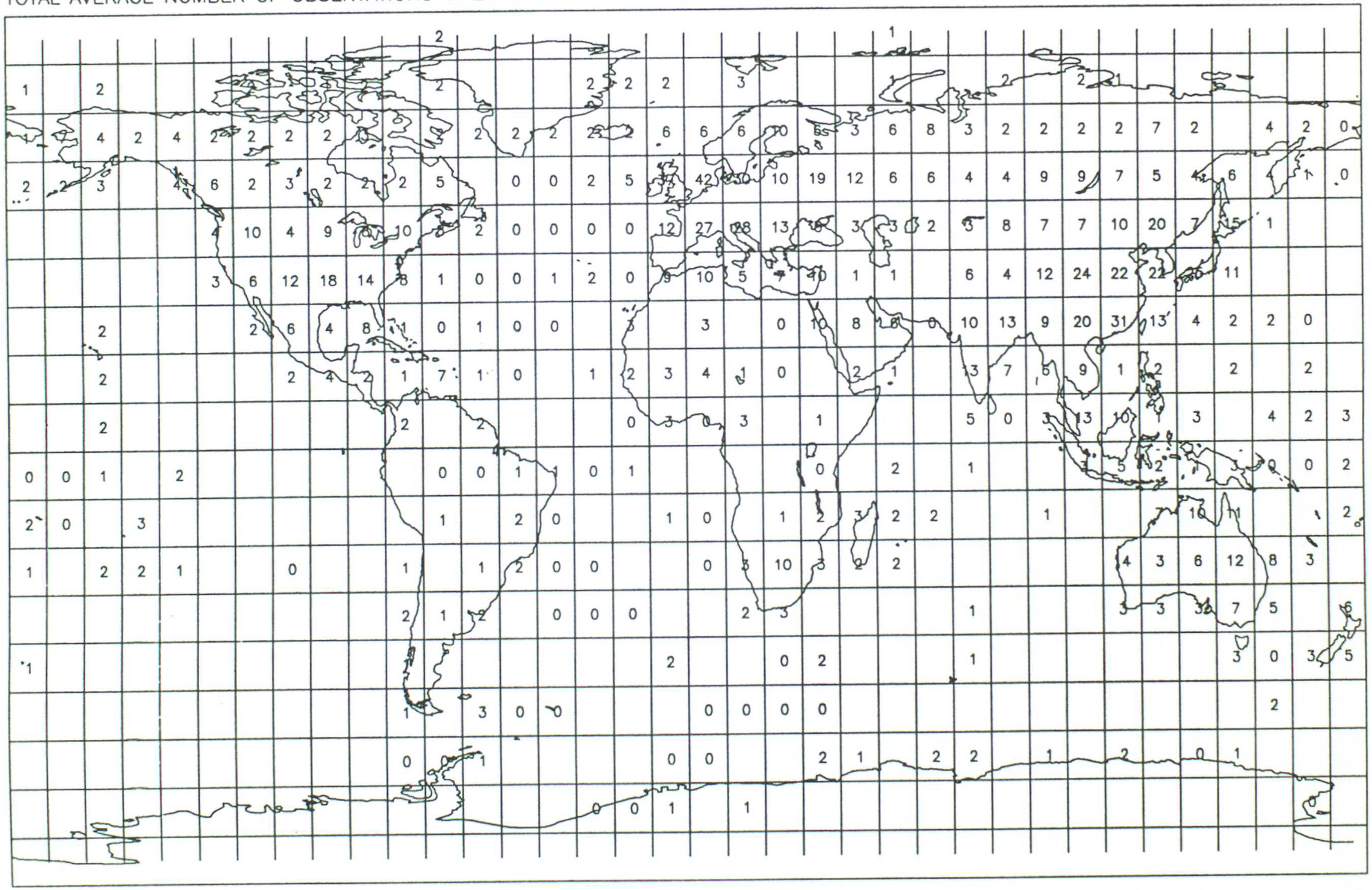

2 1
1 2 2 2 2 2 3 1 2 2 1
4 2 4 2 2 2 2 2 2 2 2 6 6 6 10 6 3 6 8 3 2 2 2 2 7 2 4 2 0
2 2 3 4 6 2 3 2 2 2 5 0 0 2 5 3 42 30 10 19 12 6 6 4 4 9 9 7 5 4 6 4 1 0
4 10 4 9 6 10 2 0 0 0 0 12 27 28 13 18 3 3 2 3 8 7 7 10 20 7 15 1
3 6 12 18 14 8 1 0 0 1 2 0 9 10 5 7 10 1 1 6 4 12 24 22 22 20 11
2 2 6 4 8 1 0 1 0 0 3 3 0 10 8 8 0 10 13 9 20 31 13 4 2 2 0
2 2 4 2 1 7 1 0 1 2 3 4 1 0 2 1 13 7 6 9 1 2 2 2
2 2 2 0 3 0 3 1 5 0 3 13 10 1 3 4 2 3
0 0 1 2 0 0 1 1 0 1 0 2 1 5 2 0 0 2
2 0 3 1 2 0 1 0 1 2 3 2 2 1 7 10 11 2
1 2 2 1 0 1 1 2 0 0 0 3 10 3 2 2 4 3 6 12 8 3
2 1 2 0 0 0 2 3 1 3 3 32 7 5 6
1 2 0 2 1 3 0 3 5
1 3 0 0 0 0 0 0 2
0 1 0 0 2 1 2 2 1 2 0 1
0 0 1 1 0

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
41316	00	V	150	17/ 54	22	0	13	-14.9	2.2	19.4	3
41780	00	V	150	25/ 67	11	0	0	-21.8	3.3	21.3	4
42339	00	V	200	26/ 73	14	0	7	-21.2	-2.9	22.1	3
42339	12	V	250	26/ 73	10	0	0	-14.7	-0.4	15.6	1
47058	00	V	400	39/ 126	12	0	16	-9.4	3.8	16.7	1
56146	12	V	100	32/ 100	10	0	30	14.1	3.0	18.9	3

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – MARCH 1996

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

TOTAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1213

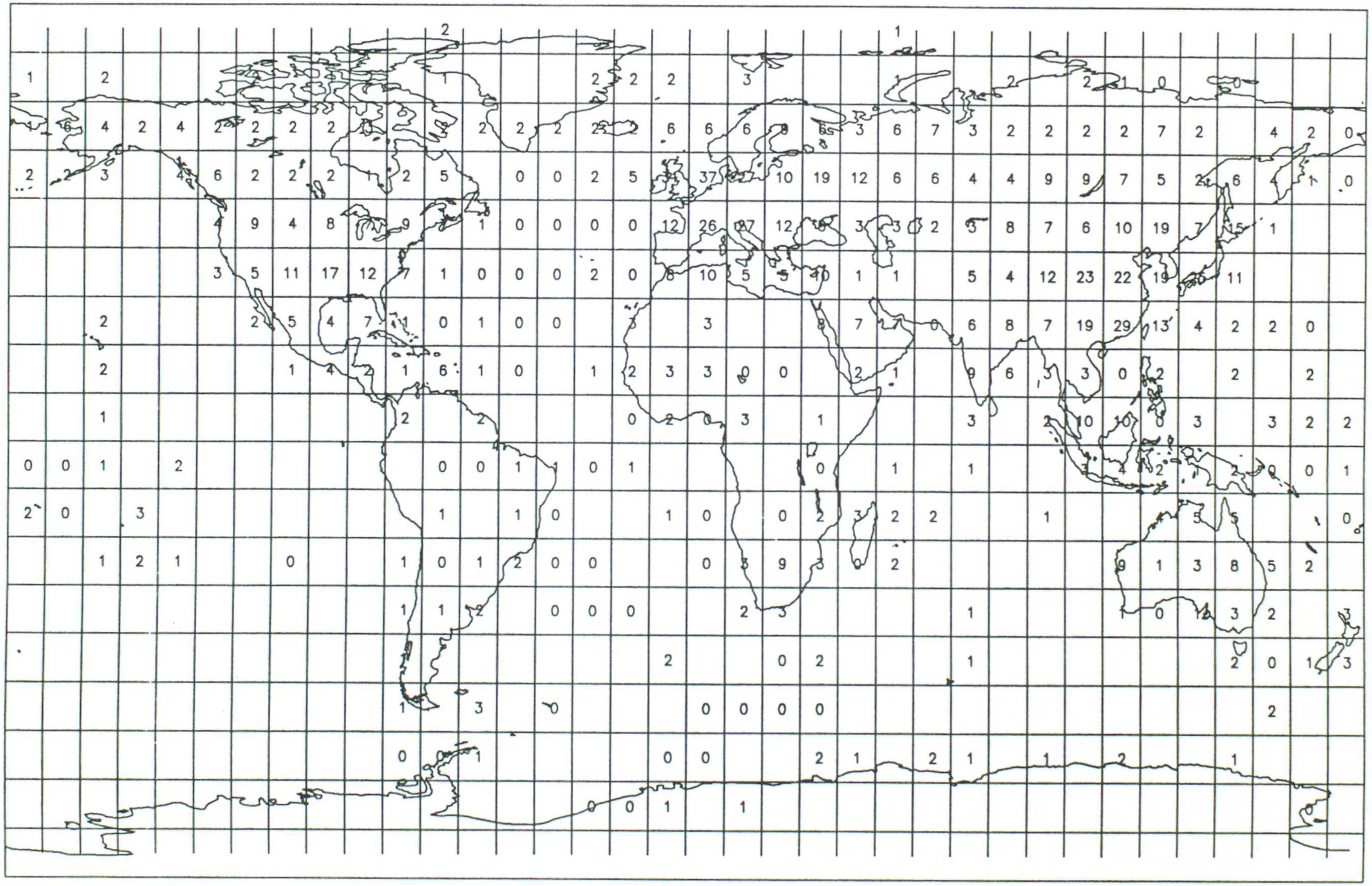

2 1
1 2 1 2 2 2 3 2 2 1 0 0
1 6 4 2 4 2 2 2 2 3 2 2 2 2 6 6 6 8 6 3 6 7 3 2 2 2 2 7 2 4 2 0
2 2 3 4 6 2 2 2 1 2 5 0 0 2 5 3 37 2 10 19 12 6 6 4 4 9 9 7 5 2 6 4 1 0
4 9 4 8 9 1 0 0 0 0 12 26 27 12 8 3 3 2 3 8 7 6 10 19 7 15 1
3 5 11 17 12 7 1 0 0 0 2 0 8 10 5 5 10 1 1 5 4 12 23 22 19 10 11
2 2 5 4 7 1 0 1 0 0 3 3 8 7 0 6 8 7 19 29 13 4 2 2 0
2 1 4 2 1 6 1 0 1 2 3 3 0 0 2 1 9 6 3 3 0 2 2 2
1 2 2 0 2 0 3 1 3 2 10 10 0 3 3 2 2
0 0 1 2 0 0 1 1 0 1 0 1 1 3 4 2 2 0 0 1
2 0 3 1 1 0 1 0 0 2 3 2 2 1 5 5 0
1 2 1 0 1 0 1 2 0 0 0 3 9 3 0 2 9 1 3 8 5 2
1 1 2 0 0 0 2 3 1 1 0 12 3 2 3
2 0 2 1 2 0 1 3
1 3 0 0 0 0 0 2
0 1 0 0 2 1 2 1 1 2 1
0 0 1 1 0

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA
:NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
17280	00	DD	38/ 40	29	-10.3	6.1	11.2
25399	00	DD	66/-170	23	12.2	4.9	13.9
31168	00	DD	56/ 138	5	18.9	8.8	16.1
40265	00	DD	32/ 36	27	-35.4	2.3	15.4
41780	00	DD	25/ 67	11	-12.6	1.2	21.6
42339	12	DD	26/ 73	12	19.0	8.7	15.9
44373	12	DD	44/ 104	16	15.3	8.8	17.1
53614	00	DD	38/ 106	31	-11.7	5.1	10.0
53614	12	DD	38/ 106	31	-13.4	5.4	10.5
59134	12	DD	24/ 118	21	10.3	2.1	8.1
60571	00	DD	32/ -2	17	11.9	5.8	10.9
62337	12	DD	31/ 34	6	10.3	3.3	9.8
91348	00	DD	7/ 158	19	-13.0	9.5	27.6
91938	12	DD	-18/-150	18	-10.7	8.5	24.2
96935	00	DD	-7/ 113	13	21.3	10.0	24.1

MONITORING OF SATELLITE WINDS

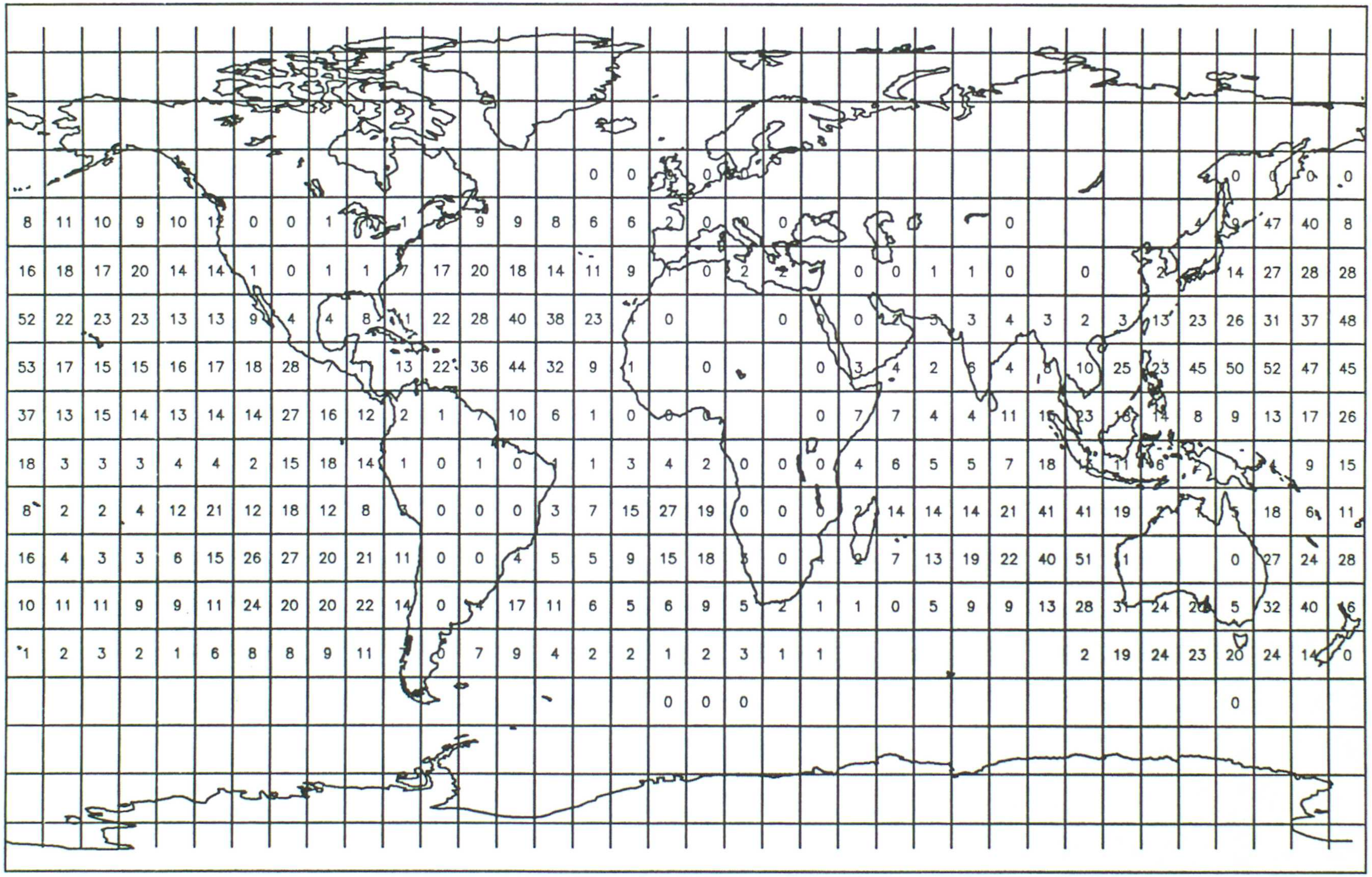
MONITORING CENTRE: BRACKNELL

MONTH: March 1996

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES, METEOSAT, GMS, INSAT.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

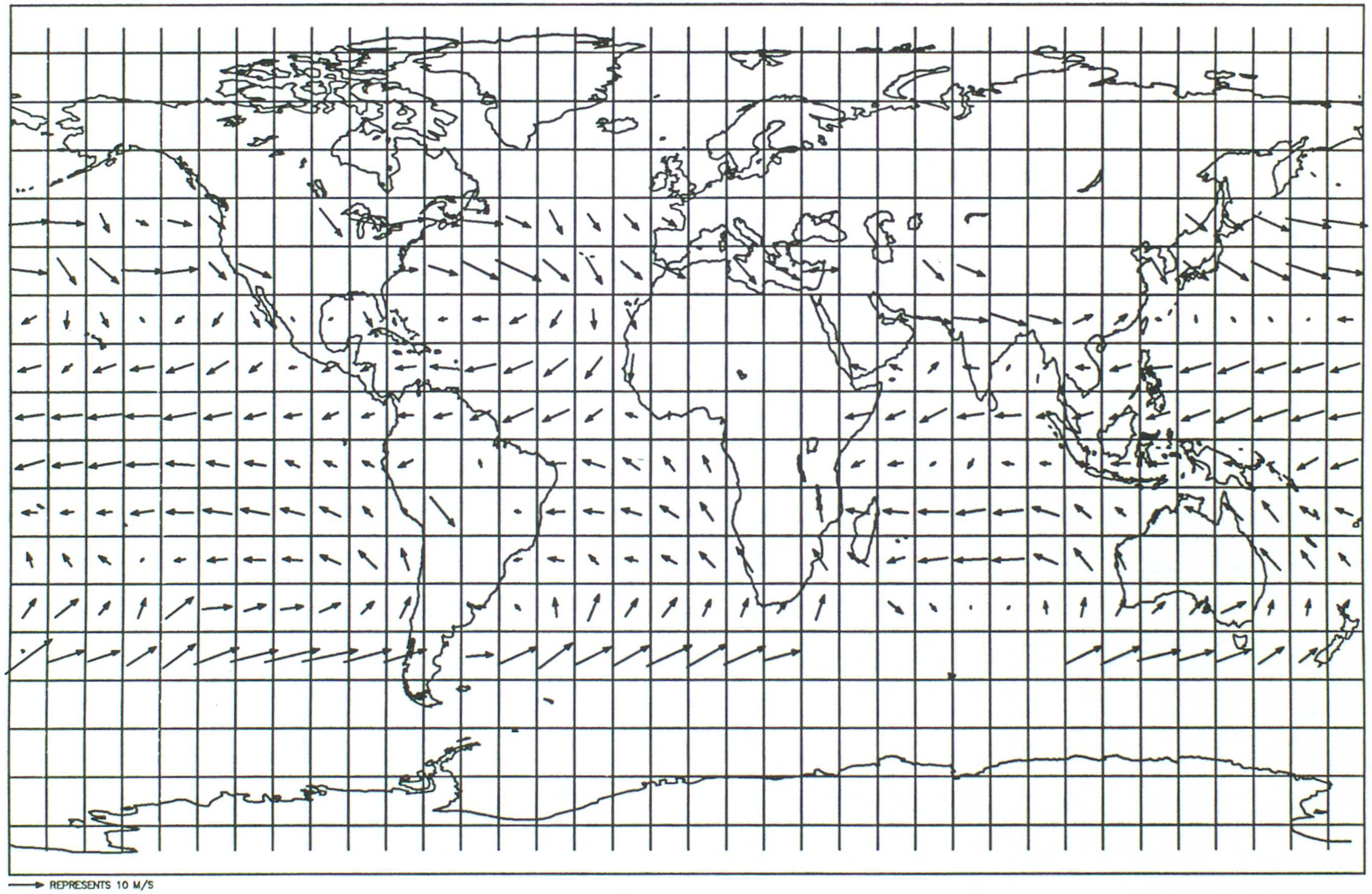
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
MARCH 1996



															0	0	0	0														0	0	0	0
8	11	10	9	10	12	0	0	1	[illegible]	1		9	9	8	6	6	2	0	0	0						0					4	9	47	40	8
16	18	17	20	14	14	1	0	1	1	7	17	20	18	14	11	9	1	0	2	2	[illegible]	0	0	1	1	0		0		2		14	27	28	28
52	22	23	23	13	13	9	4	4	8	11	22	28	40	38	23	4	0			0	0	0	2	3	3	4	3	2	3	13	23	26	31	37	48
53	17	15	15	16	17	18	28	7	1	13	22	36	44	32	9	1		0			0	3	4	2	6	4	8	10	25	23	45	50	52	47	45
37	13	15	14	13	14	14	27	16	12	2	1	7	10	6	1	0	0	0			0	7	7	4	4	11	15	23	18	14	8	9	13	17	26
18	3	3	3	4	4	2	15	18	14	1	0	1	0	1	1	3	4	2	0	0	0	4	6	5	5	7	18	[illegible]	11	6	[illegible]		[illegible]	9	15
8	2	2	4	12	21	12	18	12	8	3	0	0	0	3	7	15	27	19	0	0	0	2	14	14	14	21	41	41	19	2	1	5	18	6	11
16	4	3	3	6	15	26	27	20	21	11	0	0	4	5	5	9	15	18	3	0	4	2	7	13	19	22	40	51	1			0	27	24	28
10	11	11	9	9	11	24	20	20	22	14	0	4	17	11	6	5	6	9	5	2	1	1	0	5	9	9	13	28	31	24	26	5	32	40	16
1	2	3	2	1	6	8	8	9	11	7	0	7	9	4	2	2	1	2	3	1	1							2	19	24	23	20	24	14	0
																	0	0	0													0			

SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA
MARCH 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11


REPRESENTS 10 M/S

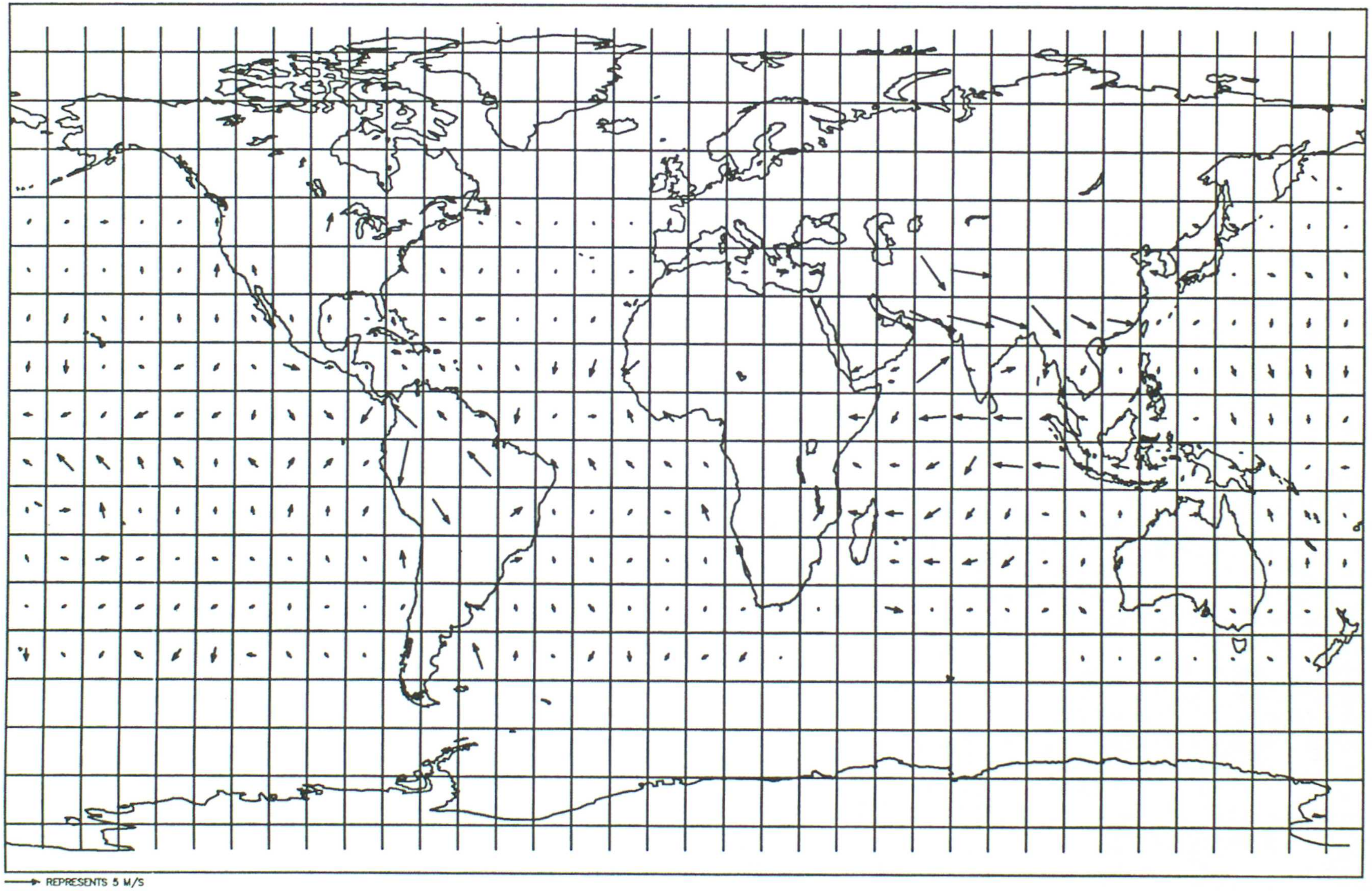
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

MARCH 1996

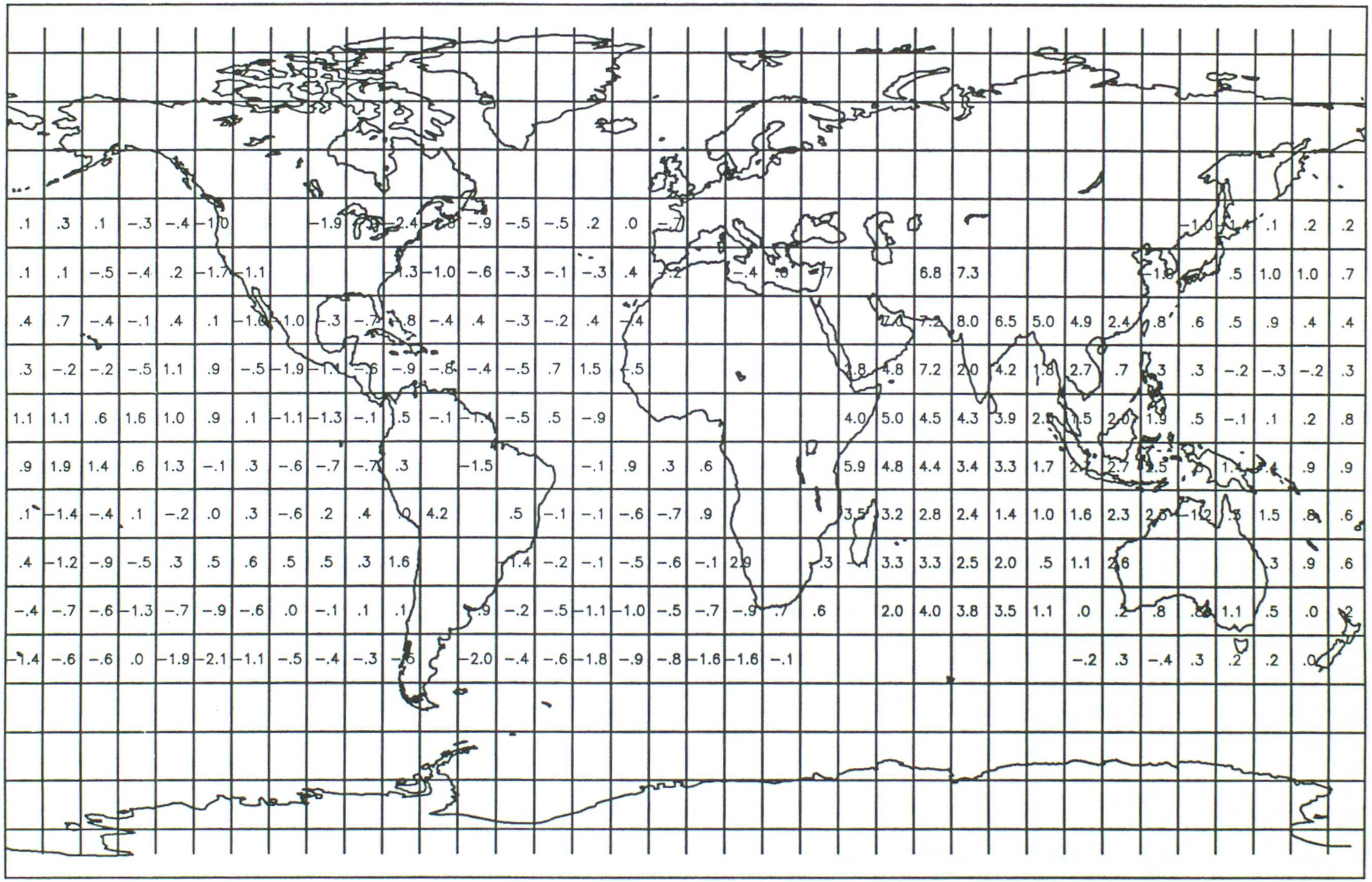
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

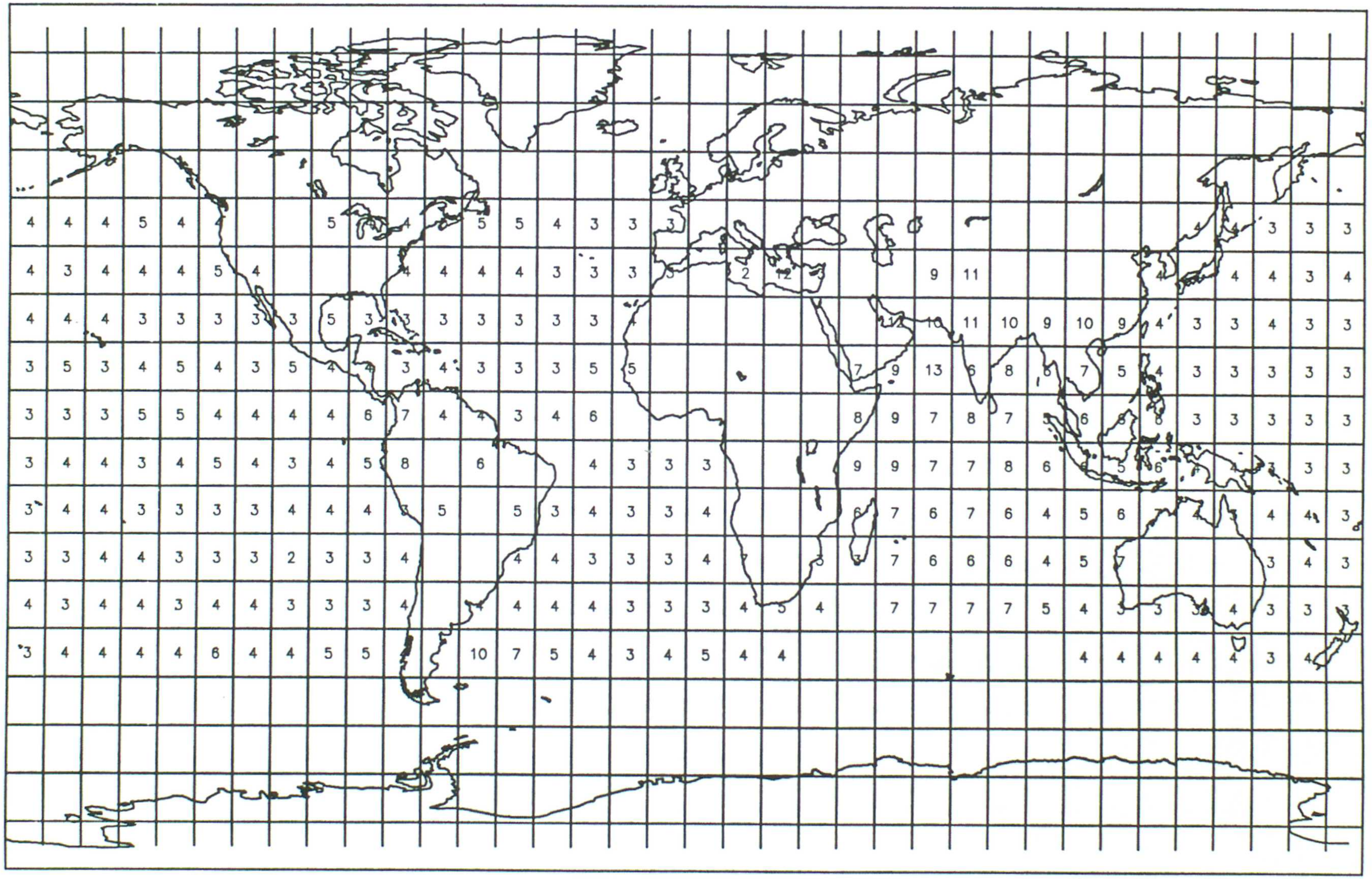
FIGURE 12



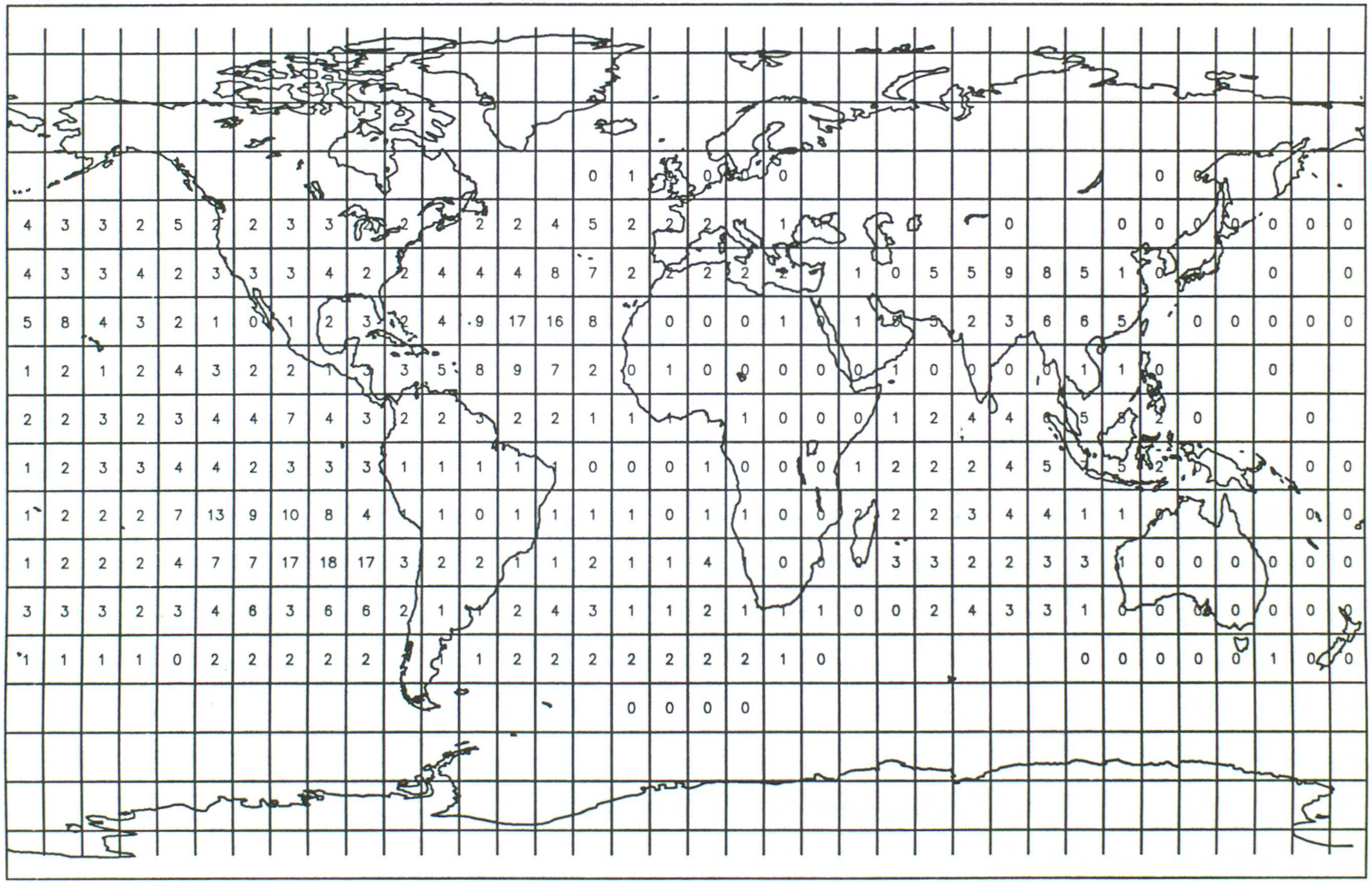
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
MARCH 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


.1 .3 .1 −.3 −.4 −1.0 −1.9 −2.4 −.8 −.9 −.5 −.5 .2 .0 −.7 −1.0 −1.4 .1 .2 .2
.1 .1 −.5 −.4 .2 −1.7 −1.1 −1.3 −1.0 −.6 −.3 −.1 −.3 .4 −.2 −.4 .6 −.7 6.8 7.3 −1.0 .5 1.0 1.0 .7
.4 .7 −.4 −.1 .4 .1 −1.6 −1.0 −.3 −.7 −.8 −.4 .4 −.3 −.2 .4 −.4 7.0 7.2 8.0 6.5 5.0 4.9 2.4 .8 .6 .5 .9 .4 .4
.3 −.2 −.2 −.5 1.1 .9 −.5 −1.9 −1.1 −.6 −.9 −.8 −.4 −.5 .7 1.5 −.5 3.8 4.8 7.2 2.0 4.2 1.8 2.7 .7 .3 .3 −.2 −.3 −.2 .3
1.1 1.1 .6 1.6 1.0 .9 .1 −1.1 −1.3 −.1 .5 −.1 −1.4 −.5 .5 −.9 4.0 5.0 4.5 4.3 3.9 2.8 1.5 2.0 1.9 .5 −.1 .1 .2 .8
.9 1.9 1.4 .6 1.3 −.1 .3 −.6 −.7 −.7 .3 −1.5 −.1 .9 .3 .6 5.9 4.8 4.4 3.4 3.3 1.7 2.7 2.7 2.5 .5 1.4 .4 .9 .9
.1 −1.4 −.4 .1 −.2 .0 .3 −.6 .2 .4 .0 4.2 .5 −.1 −.1 −.6 −.7 .9 3.5 3.2 2.8 2.4 1.4 1.0 1.6 2.3 2.5 −1.2 .3 1.5 .8 .6
.4 −1.2 −.9 −.5 .3 .5 .6 .5 .5 .3 1.6 1.4 −.2 −.1 −.5 −.6 −.1 2.9 .3 −.1 3.3 3.3 2.5 2.0 .5 1.1 2.6 .3 .9 .6
−.4 −.7 −.6 −1.3 −.7 −.9 −.6 .0 −.1 .1 .1 .9 −.2 −.5 −1.1 −1.0 −.5 −.7 −.9 .7 .6 2.0 4.0 3.8 3.5 1.1 .0 .2 .8 .8 1.1 .5 .0 .2
−1.4 −.6 −.6 .0 −1.9 −2.1 −1.1 −.5 −.4 −.3 −.6 −2.0 −.4 −.6 −1.8 −.9 −.8 −1.6 −1.6 −.1 −.2 .3 −.4 .3 .2 .2 .0

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
MARCH 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


4 4 4 5 4 4 5 4 5 5 4 3 3 3 4 4 3 3 3
4 3 4 4 4 5 4 4 4 4 4 3 3 3 3 2 12 3 9 11 4 4 4 3 4
4 4 4 3 3 3 3 3 5 3 3 3 3 3 3 3 4 12 10 11 10 9 10 9 4 3 3 4 3 3
3 5 3 4 5 4 3 5 4 4 3 4 3 3 3 5 5 7 9 13 6 8 6 7 5 4 3 3 3 3 3
3 3 3 5 5 4 4 4 4 6 7 4 4 3 4 6 8 9 7 8 7 3 6 6 6 3 3 3 3 3
3 4 4 3 4 5 4 3 4 5 8 6 4 3 3 3 9 9 7 7 8 6 6 5 6 4 3 3 3
3 4 4 3 3 3 3 4 4 4 3 5 5 3 4 3 3 4 6 7 6 7 6 4 5 6 7 4 3 4 4 3
3 3 4 4 3 3 3 2 3 3 4 4 4 3 3 3 4 7 3 3 7 6 6 6 4 5 7 3 4 3
4 3 4 4 3 4 4 3 3 3 4 4 4 4 4 3 3 3 4 5 4 7 7 7 7 5 4 3 3 3 4 3 3 3
3 4 4 4 4 6 4 4 5 5 10 7 5 4 3 4 5 4 4 4 4 4 4 4 3 4

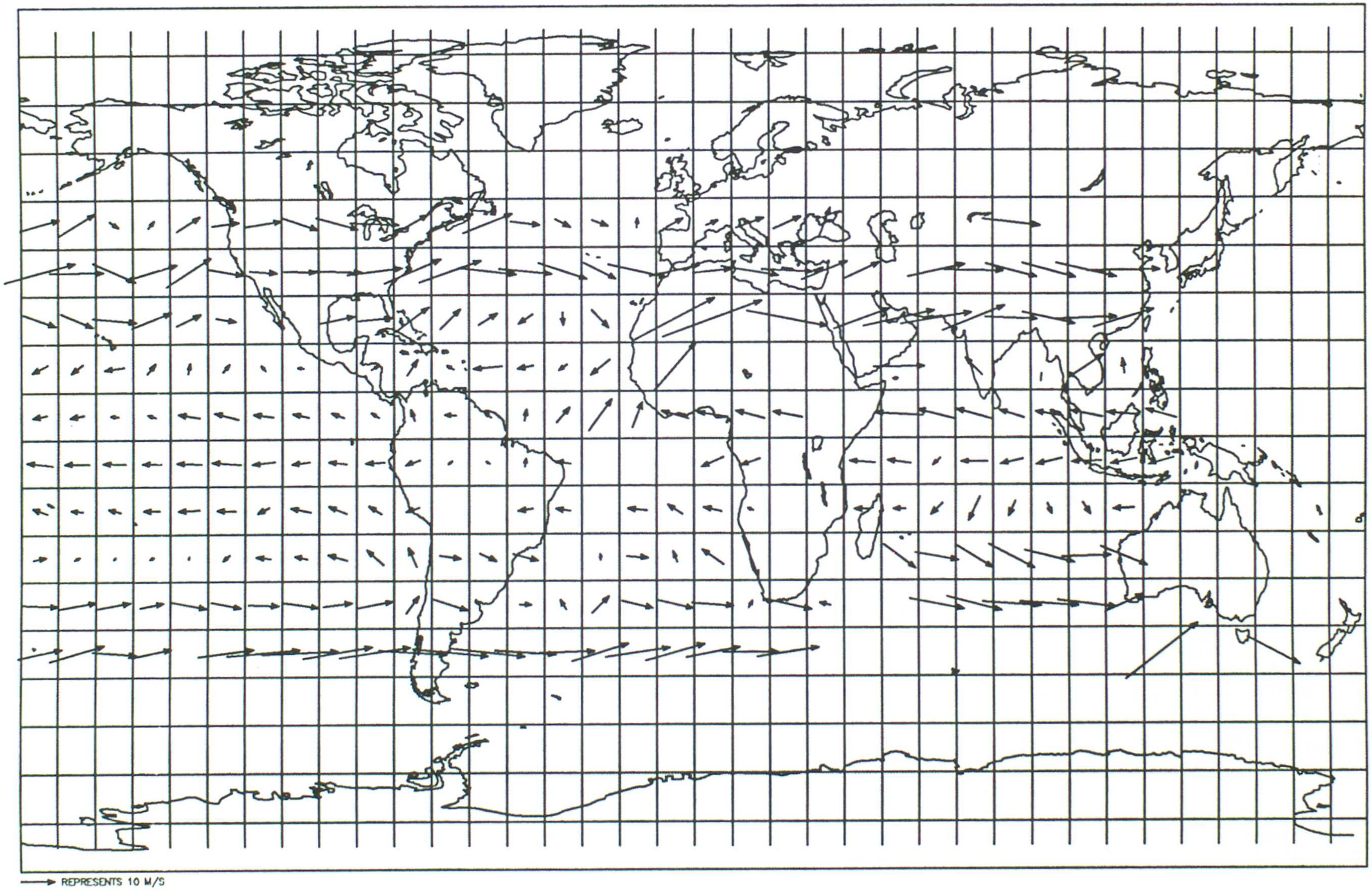
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
MARCH 1996



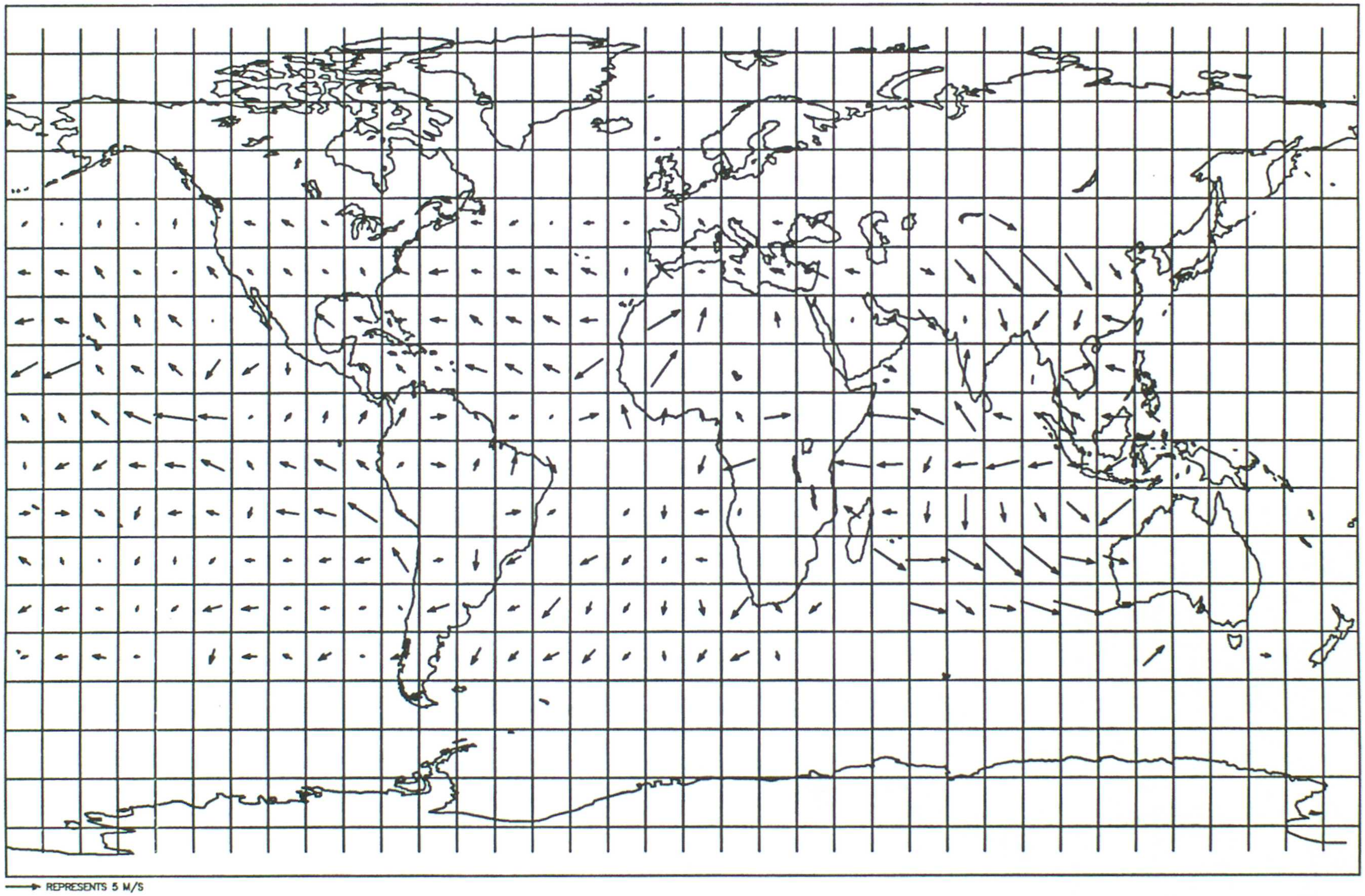
														0	1	0	0	0	0										0	0				
4	3	3	2	5	2	2	3	3	2	2		2	2	4	5	2	2	2		1	1					0			0	0	0	0	0	0	0
4	3	3	4	2	3	3	3	4	2	2	4	4	4	8	7	2	2	2	2	2		1	0	5	5	9	8	5	1	0			0		0
5	8	4	3	2	1	0	1	2	3	2	4	9	17	16	8	1	0	0	0	1	0	1	5	5	2	3	6	6	5		0	0	0	0	0
1	2	1	2	4	3	2	2	1	3	3	5	8	9	7	2	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0			0		
2	2	3	2	3	4	4	7	4	3	2	2	3	2	2	1	1	1		1	0	0	0	1	2	4	4	6	5	8	2	0			0	
1	2	3	3	4	4	2	3	3	3	1	1	1	1	1	0	0	0	1	0	0	0	1	2	2	2	4	5	7	5	2	0			0	0
1	2	2	2	7	13	9	10	8	4	1	1	0	1	1	1	1	0	1	1	0	0	2	2	2	3	4	4	1	1	0				0	0
1	2	2	2	4	7	7	17	18	17	3	2	2	1	1	2	1	1	4		0	0	0	3	3	2	2	3	3	1	0	0	0	0	0	0
3	3	3	2	3	4	6	3	6	6	2	1	1	2	4	3	1	1	2	1	1	1	0	0	2	4	3	3	1	0	0	0	0	0	0	0
1	1	1	1	0	2	2	2	2	2		1	1	2	2	2	2	2	2	2	1	0							0	0	0	0	0	1	0	0
																0	0	0	0																

FIGURE 16

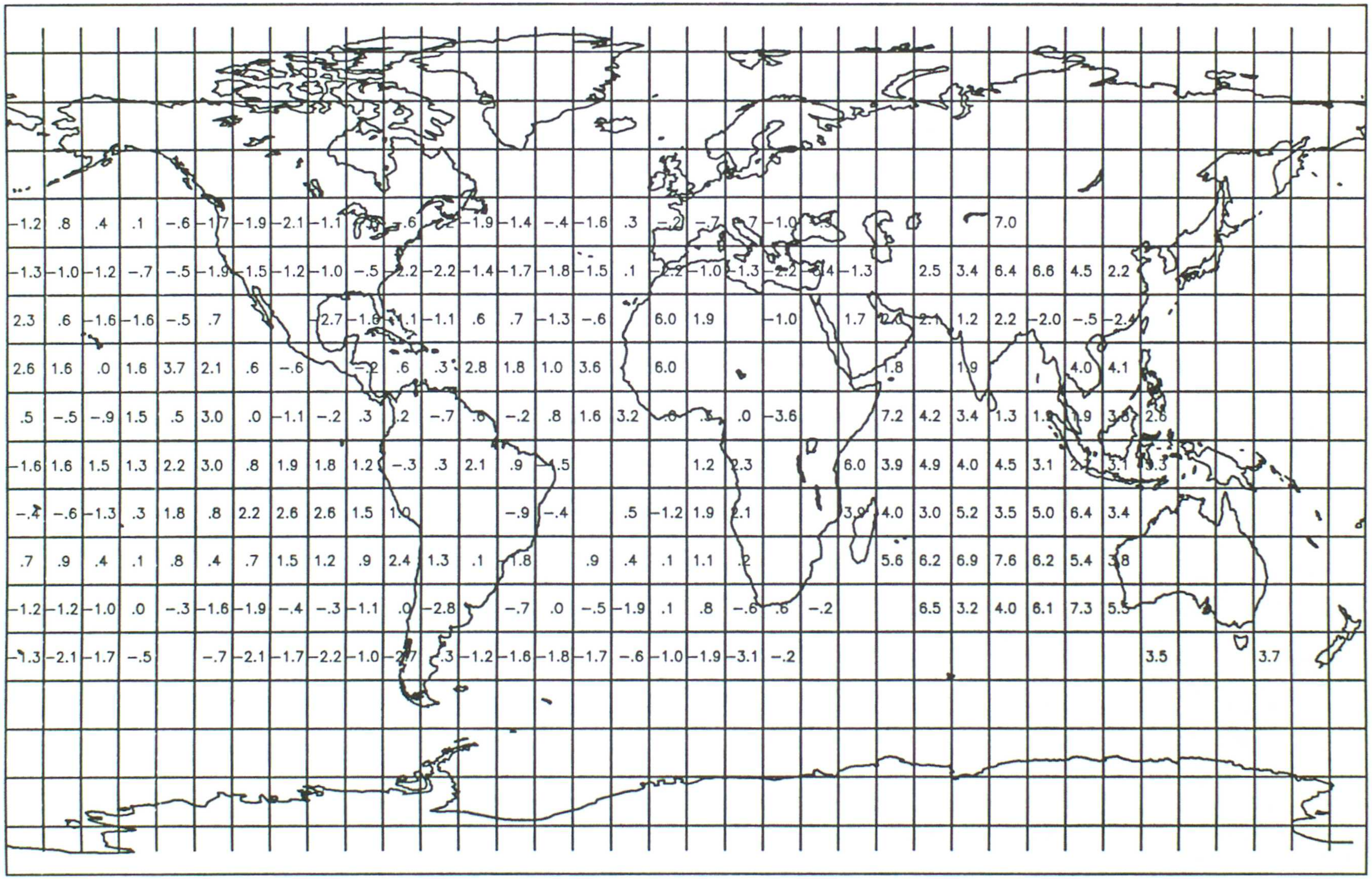
SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
MARCH 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

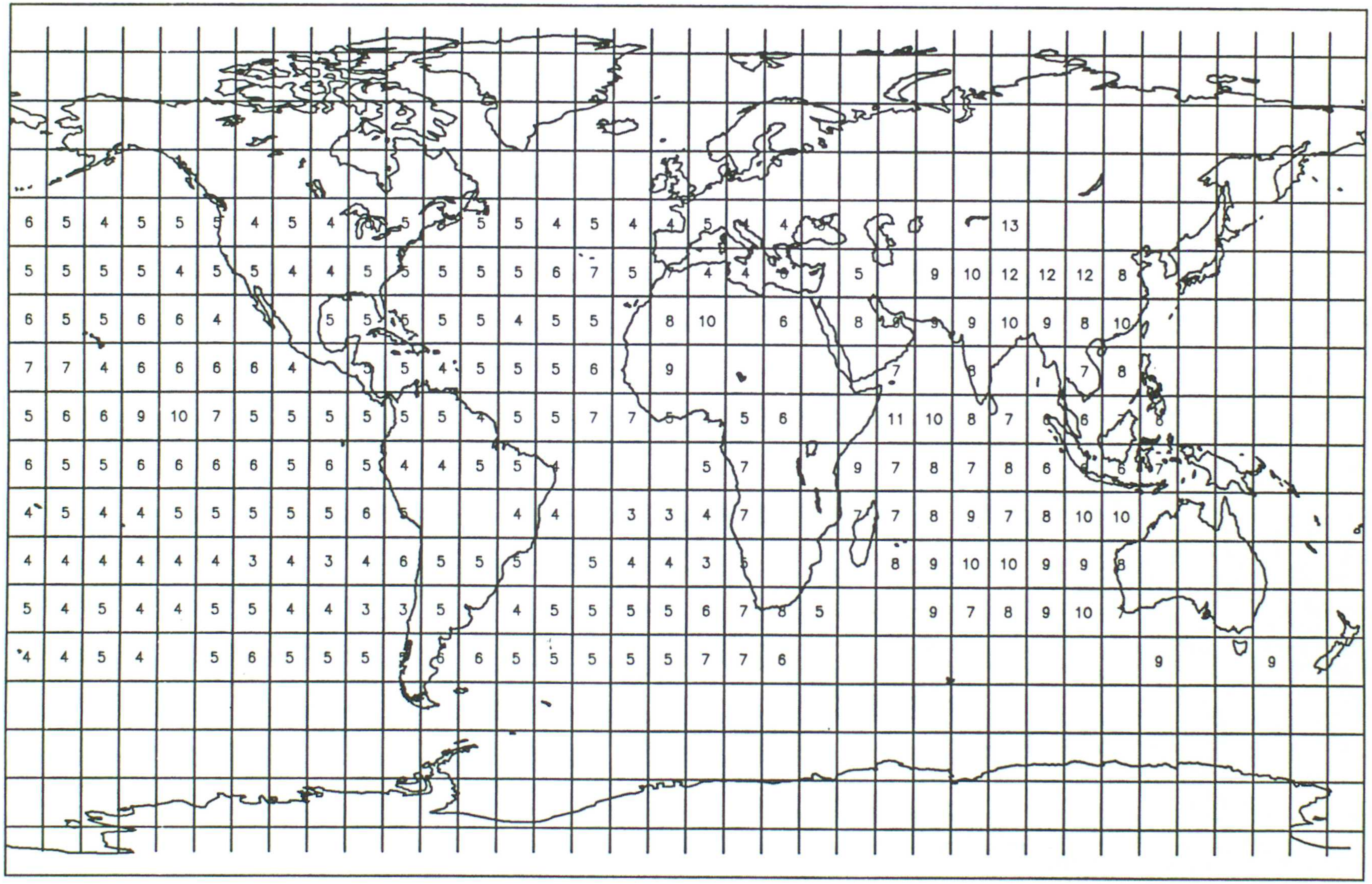
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA FIGURE 17
MARCH 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 5 M/S

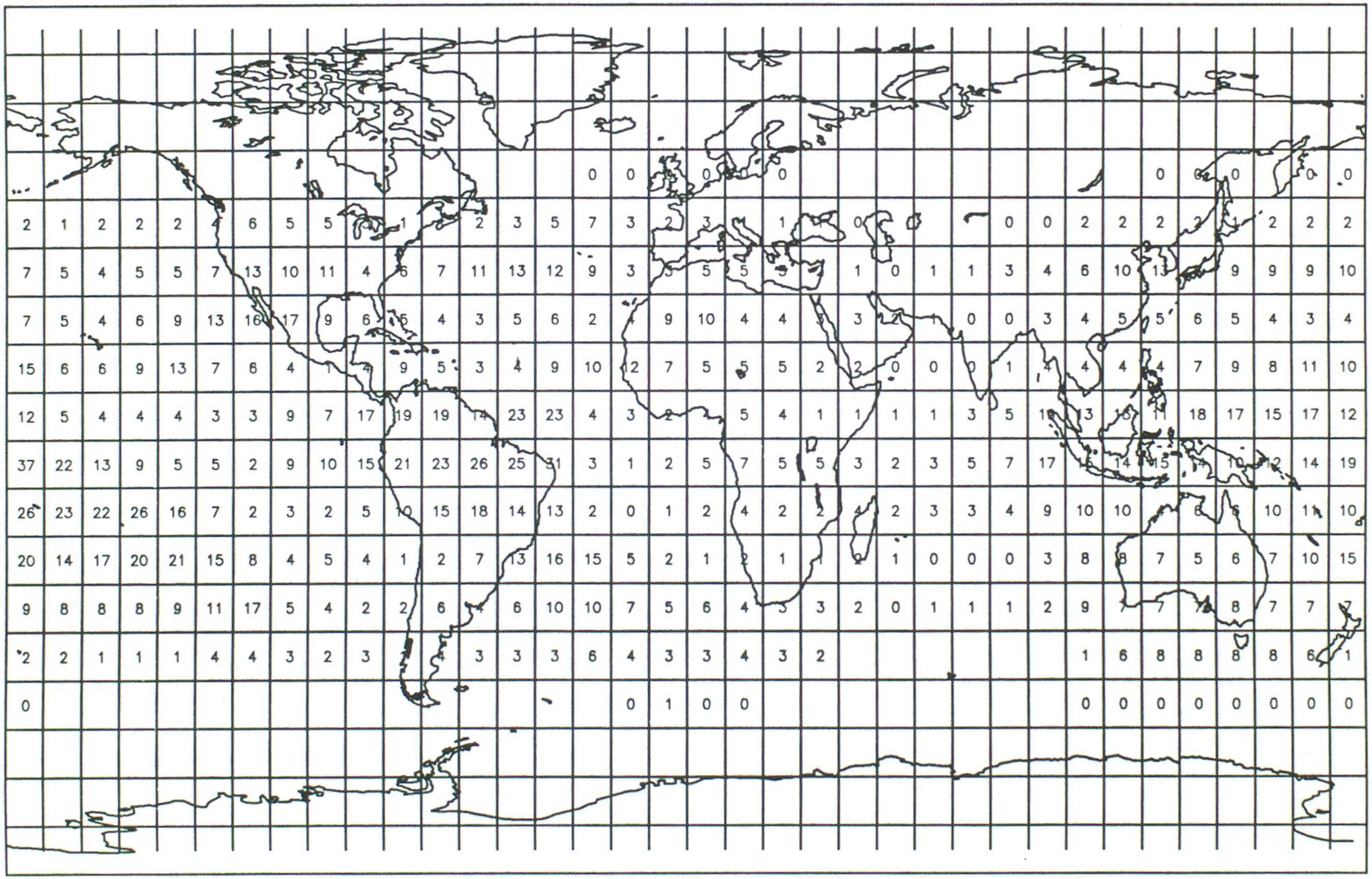
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
MARCH 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


–1.2 .8 .4 .1 –.6 –1.7 –1.9 –2.1 –1.1 .6 –.2 –1.9 –1.4 –.4 –1.6 .3 –.2 –.7 –.7 –1.0 7.0
–1.3 –1.0 –1.2 –.7 –.5 –1.9 –1.5 –1.2 –1.0 –.5 –2.2 –2.2 –1.4 –1.7 –1.8 –1.5 .1 –2.2 –1.0 –1.3 –2.2 –3.4 –1.3 2.5 3.4 6.4 6.6 4.5 2.2
2.3 .6 –1.6 –1.6 –.5 .7 –2.7 –1.6 –1.1 –1.1 .6 .7 –1.3 –.6 6.0 1.9 –1.0 1.7 2.0 2.1 1.2 2.2 –2.0 –.5 –2.4
2.6 1.6 .0 1.6 3.7 2.1 .6 –.6 –.2 .6 .3 2.8 1.8 1.0 3.6 6.0 1.8 1.9 4.0 4.1
.5 –.5 –.9 1.5 .5 3.0 .0 –1.1 –.2 .3 .2 –.7 .6 –.2 .8 1.6 3.2 .6 .5 .0 –3.6 7.2 4.2 3.4 1.3 1.9 1.9 3.6 2.6
–1.6 1.6 1.5 1.3 2.2 3.0 .8 1.9 1.8 1.2 –.3 .3 2.1 .9 1.5 1.2 2.3 6.0 3.9 4.9 4.0 4.5 3.1 2.2 3.1 3.3
–.4 –.6 –1.3 .3 1.8 .8 2.2 2.6 2.6 1.5 1.0 –.9 –.4 .5 –1.2 1.9 2.1 3.9 4.0 3.0 5.2 3.5 5.0 6.4 3.4
.7 .9 .4 .1 .8 .4 .7 1.5 1.2 .9 2.4 1.3 .1 1.8 .9 .4 .1 1.1 .2 5.6 6.2 6.9 7.6 6.2 5.4 3.8
–1.2 –1.2 –1.0 .0 –.3 –1.6 –1.9 –.4 –.3 –1.1 .0 –2.8 –.7 .0 –.5 –1.9 .1 .8 –.6 .6 –.2 6.5 3.2 4.0 6.1 7.3 5.5
–1.3 –2.1 –1.7 –.5 –.7 –2.1 –1.7 –2.2 –1.0 –2.7 .3 –1.2 –1.6 –1.8 –1.7 –.6 –1.0 –1.9 –3.1 –.2 3.5 3.7

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
MARCH 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


6 5 4 5 5 5 4 5 4 5 5 5 4 5 4 4 5 4 4 13
5 5 5 5 4 5 5 4 4 5 5 5 5 5 6 7 5 7 4 4 6 7 5 9 10 12 12 12 8
6 5 5 6 6 4 5 5 5 5 5 4 5 5 8 10 6 8 9 9 9 10 9 8 10
7 7 4 6 6 6 6 4 5 5 4 5 5 5 6 9 7 8 7 8
5 6 6 9 10 7 5 5 5 5 5 5 4 5 5 7 7 5 5 6 11 10 8 7 6 6 7 8
6 5 5 6 6 6 6 5 6 5 4 4 5 5 4 5 7 9 7 8 7 8 6 6 6 7
4 5 4 4 5 5 5 5 5 6 5 4 4 3 3 4 7 7 7 8 9 7 8 10 10
4 4 4 4 4 4 3 4 3 4 6 5 5 5 5 4 4 3 5 8 9 10 10 9 9 8
5 4 5 4 4 5 5 4 4 3 3 5 4 5 5 5 5 6 7 8 5 9 7 8 9 10 7
4 4 5 4 5 6 5 5 5 5 6 6 5 5 5 5 5 7 7 6 9 9

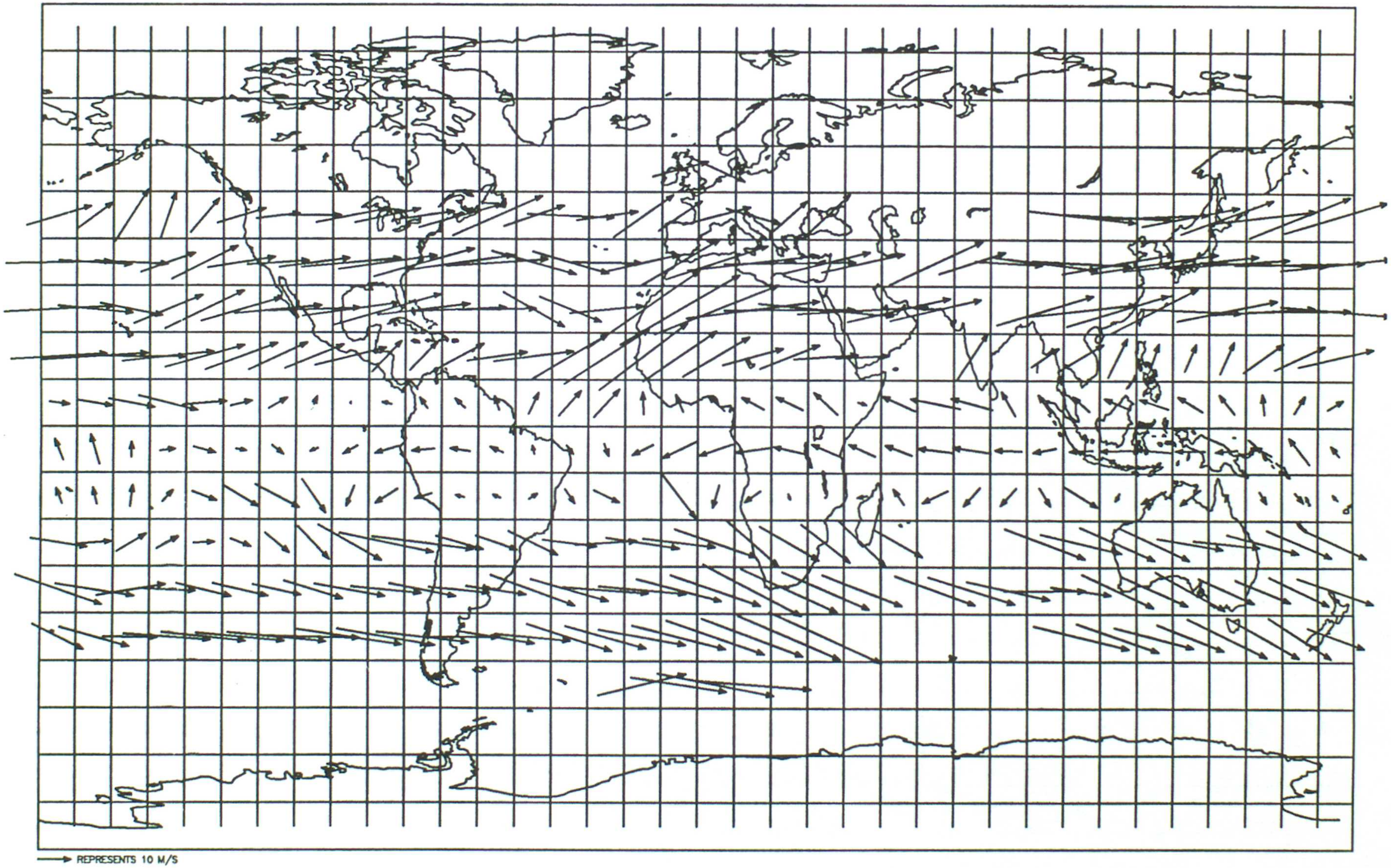
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
MARCH 1996



															0	0	0	0	0	0										0	0	0		0	0
2	1	2	2	2	4	6	5	5	[illegible]	1		2	3	5	7	3	2	3	4	1	1	0				0	0	2	2	2	2	1	2	2	2
7	5	4	5	5	7	13	10	11	4	6	7	11	13	12	9	3	5	5	5	5	2	1	0	1	1	3	4	6	10	13		9	9	9	10
7	5	4	6	9	13	16	17	9	6	5	4	3	5	6	2	4	9	10	4	4	3	3	2	1	0	0	3	4	5	5	6	5	4	3	4
15	6	6	9	13	7	6	4	1	4	9	5	3	4	9	10	12	7	5	5	5	2	2	0	0	0	1	4	4	4	4	7	9	8	11	10
12	5	4	4	4	3	3	9	7	17	19	19	14	23	23	4	3	2	[illegible]	5	4	1	1	1	1	3	5	16	13	16	11	18	17	15	17	12
37	22	13	9	5	5	2	9	10	15	21	23	26	25	31	3	1	2	5	7	5	5	3	2	3	5	7	17	15	14	15	14	10	12	14	19
26	23	22	26	16	7	2	3	2	5	10	15	18	14	13	2	0	1	2	4	2	2	4	2	3	3	4	9	10	10	4	6	6	10	11	10
20	14	17	20	21	15	8	4	5	4	1	2	7	13	16	15	5	2	1	2	1	1	2	1	0	0	0	3	8	8	7	5	6	7	10	15
9	8	8	8	9	11	17	5	4	2	2	6	4	6	10	10	7	5	6	4	3	3	2	0	1	1	1	2	9	7	7	7	8	7	7	7
2	2	1	1	1	4	4	3	2	3	[illegible]	4	3	3	3	6	4	3	3	4	3	2							1	6	8	8	8	8	6	1
0																0	1	0	0									0	0	0	0	0	0	0	0

SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA
MARCH 1996
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

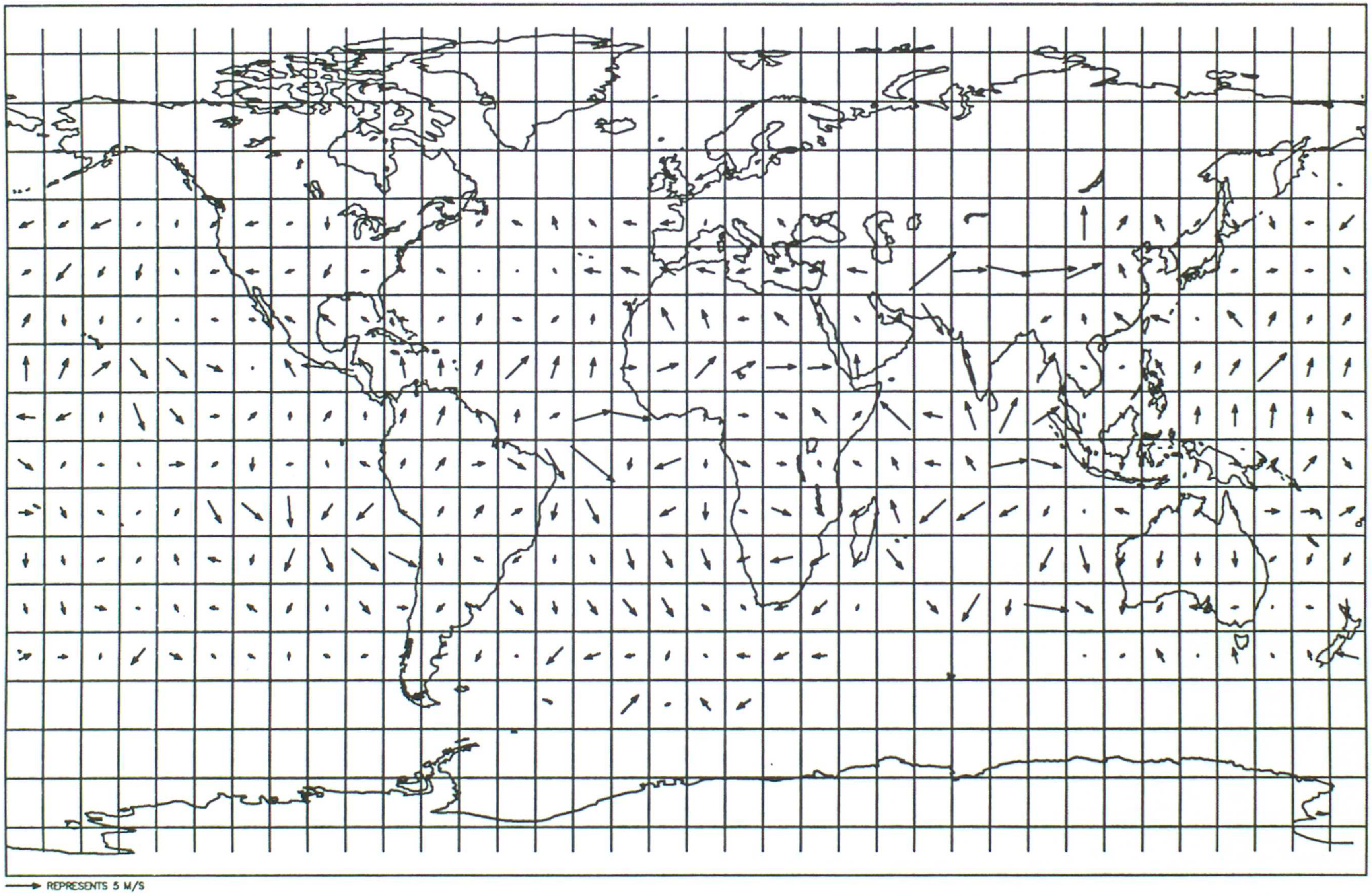
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 101–400 HPA

MARCH 1996

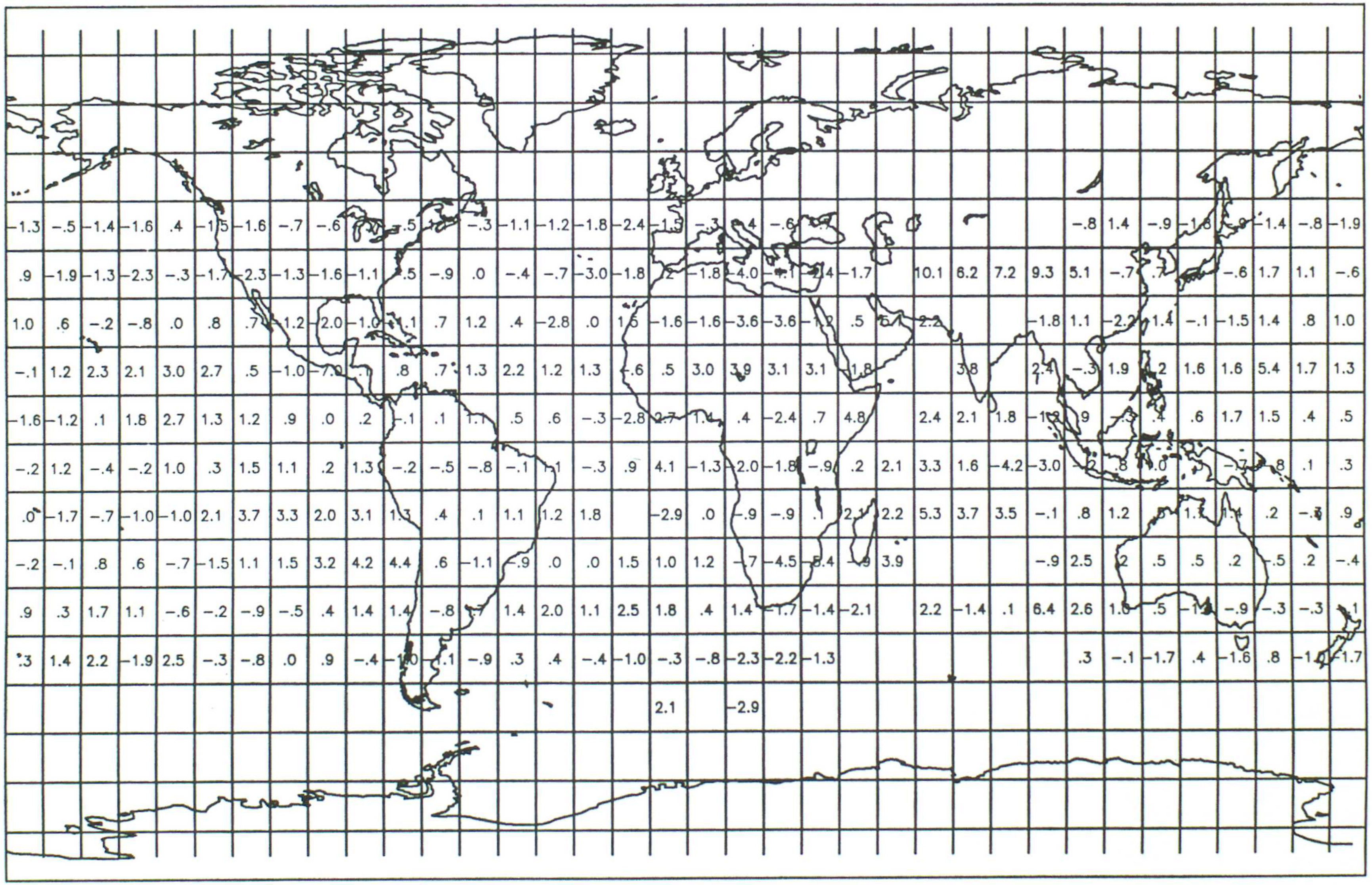
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

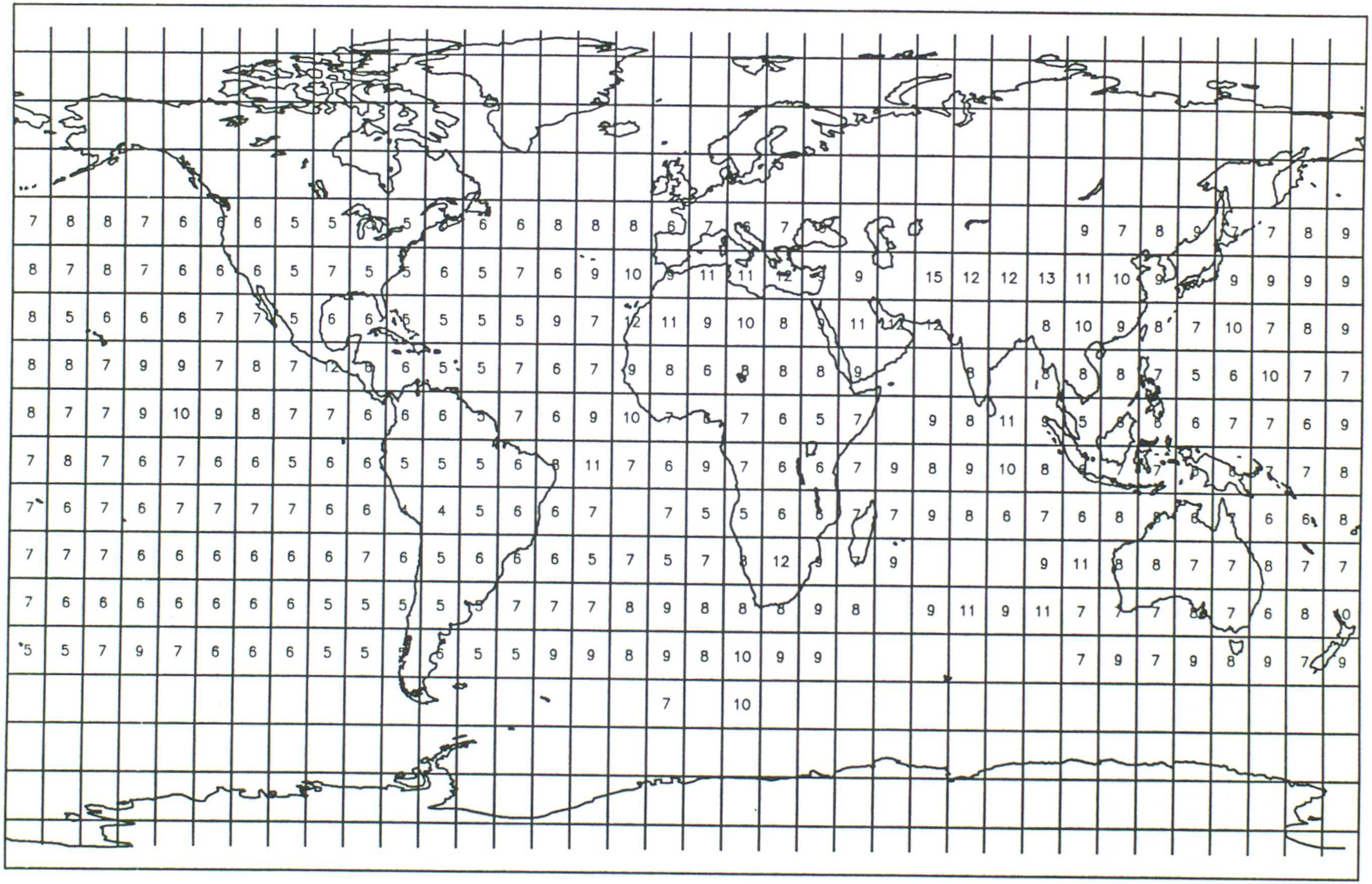
FIGURE 22


REPRESENTS 5 M/S

SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
MARCH 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.3 -.5 -1.4 -1.6 .4 -1.5 -1.6 -.7 -.6 .5 -.3 -1.1 -1.2 -1.8 -2.4 -1.5 -.3 .4 -.6 -.8 1.4 -.9 -1.6 .9 -1.4 -.8 -1.9
.9 -1.9 -1.3 -2.3 -.3 -1.7 -2.3 -1.3 -1.6 -1.1 .5 -.9 .0 -.4 -.7 -3.0 -1.8 .2 -1.8 -4.0 -.1 -.4 -1.7 10.1 6.2 7.2 9.3 5.1 -.7 .7 -.6 1.7 1.1 -.6
1.0 .6 -.2 -.8 .0 .8 .7 -1.2 -2.0 -1.0 -1.1 .7 1.2 .4 -2.8 .0 1.6 -1.6 -1.6 -3.6 -3.6 -1.2 .5 6.4 2.2 -1.8 1.1 -2.2 1.4 -.1 -1.5 1.4 .8 1.0
-.1 1.2 2.3 2.1 3.0 2.7 .5 -1.0 -7.0 .1 .8 .7 1.3 2.2 1.2 1.3 .6 .5 3.0 3.9 3.1 3.1 1.8 3.8 2.4 -.3 1.9 .2 1.6 1.6 5.4 1.7 1.3
-1.6 -1.2 .1 1.8 2.7 1.3 1.2 .9 .0 .2 -.1 .1 1.1 .5 .6 -.3 -2.8 2.7 1.4 .4 -2.4 .7 4.8 2.4 2.1 1.8 -1.9 .9 .3 .4 .6 1.7 1.5 .4 .5
-.2 1.2 -.4 -.2 1.0 .3 1.5 1.1 .2 1.3 -.2 -.5 -.8 -.1 .1 -.3 .9 4.1 -1.3 -2.0 -1.8 -.9 .2 2.1 3.3 1.6 -4.2 -3.0 .2 .8 1.0 -.7 .8 .1 .3
.0 -1.7 -.7 -1.0 -1.0 2.1 3.7 3.3 2.0 3.1 1.3 .4 .1 1.1 1.2 1.8 -2.9 .0 -.9 -.9 .1 2.1 2.2 5.3 3.7 3.5 -.1 .8 1.2 .5 1.1 1.4 .2 -.3 .9
-.2 -.1 .8 .6 -.7 -1.5 1.1 1.5 3.2 4.2 4.4 .6 -1.1 -.9 .0 .0 1.5 1.0 1.2 -.7 -4.5 -3.4 -.9 3.9 -.9 2.5 .2 .5 .5 .2 -.5 .2 -.4
.9 .3 1.7 1.1 -.6 -.2 -.9 -.5 .4 1.4 1.4 -.8 -.7 1.4 2.0 1.1 2.5 1.8 .4 1.4 -1.7 -1.4 -2.1 2.2 -1.4 .1 6.4 2.6 1.0 .5 -1.4 -.9 -.3 -.3 .1
.3 1.4 2.2 -1.9 2.5 -.3 -.8 .0 .9 -.4 -1.0 -.1 -.9 .3 .4 -.4 -1.0 -.3 -.8 -2.3 -2.2 -1.3 .3 -.1 -1.7 .4 -1.6 .8 -1.0 -1.7
2.1 -2.9

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
MARCH 1996
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


7 8 8 7 6 6 6 5 5 5 5 6 6 8 8 8 6 7 6 7 8 9 7 8 9 7 7 8 9
8 7 8 7 6 6 6 5 7 5 5 6 5 7 6 9 10 9 11 11 12 9 9 15 12 12 13 11 10 9 9 9 9 9
8 5 6 6 6 7 7 5 6 6 5 5 5 5 9 7 12 11 9 10 8 9 11 12 12 8 10 9 8 7 10 7 8 9
8 8 7 9 9 7 8 7 12 8 6 5 5 7 6 7 9 8 6 8 8 8 9 8 8 8 8 7 5 6 10 7 7
8 7 7 9 10 9 8 7 7 6 6 6 5 7 6 9 10 7 8 7 6 5 7 9 8 11 9 5 8 6 6 7 7 6 9
7 8 7 6 7 6 6 5 6 6 5 5 5 6 8 11 7 6 9 7 6 6 7 9 8 9 10 8 6 7 7 9 8 7 7 8
7 6 7 6 7 7 7 7 6 6 4 4 5 6 6 7 7 5 5 6 6 7 7 9 8 6 7 6 8 8 6 7 6 6 8
7 7 7 6 6 6 6 6 6 7 6 5 6 6 6 5 7 5 7 8 12 9 7 9 9 11 8 8 7 7 8 7 7
7 6 6 6 6 6 6 6 5 5 5 5 5 7 7 7 8 9 8 8 8 9 8 9 11 9 11 7 7 7 8 7 6 8 10
5 5 7 9 7 6 6 6 5 5 5 6 5 5 9 9 8 9 8 10 9 9 7 9 7 9 8 9 7 9
7 10

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

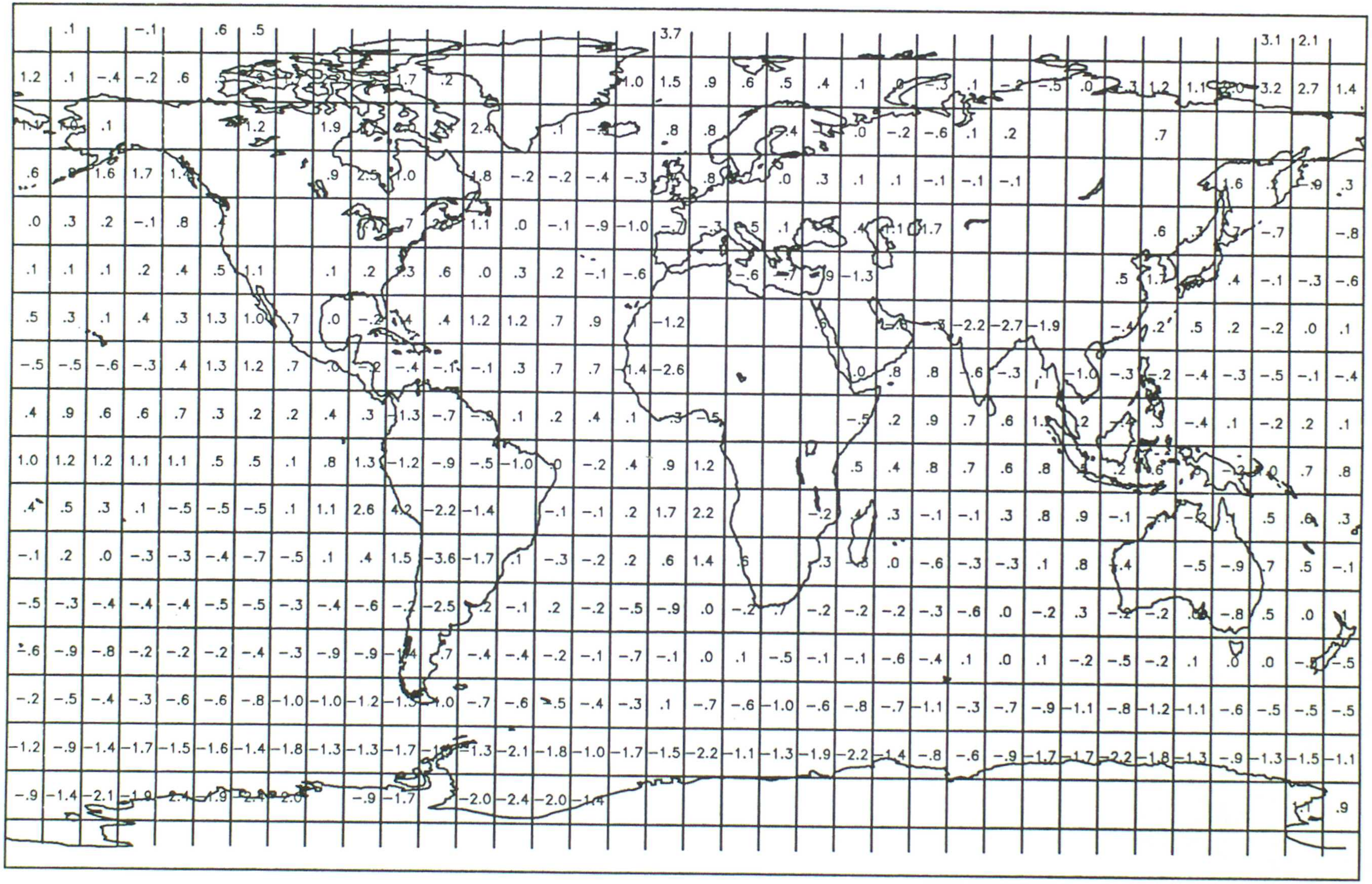
MONTH: March 1996

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-12, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

500 KM SATEMS : MEAN O−B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
MARCH 1996
NOAA−12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 25



500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA

MARCH 1996

NOAA-12, USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

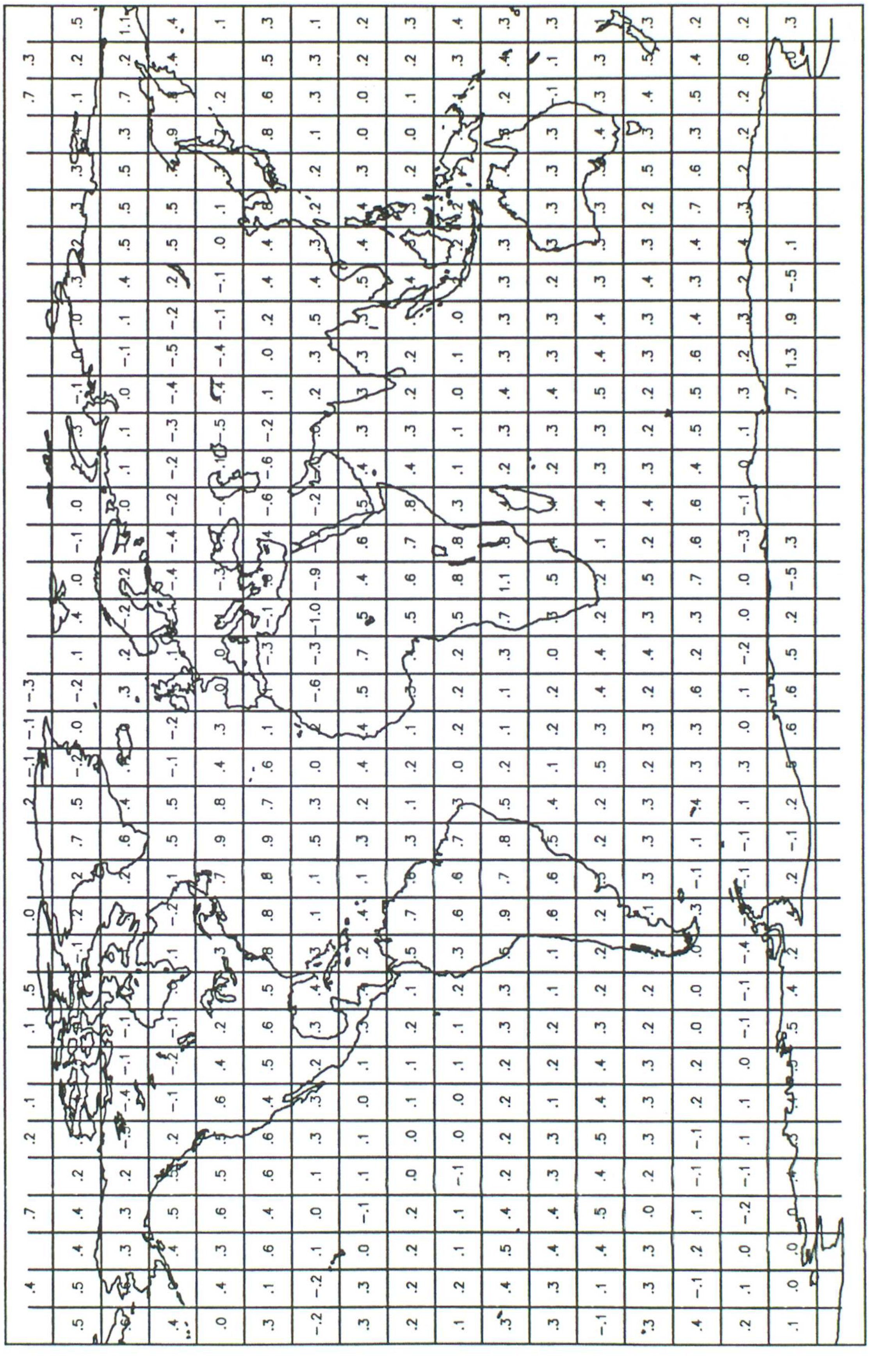
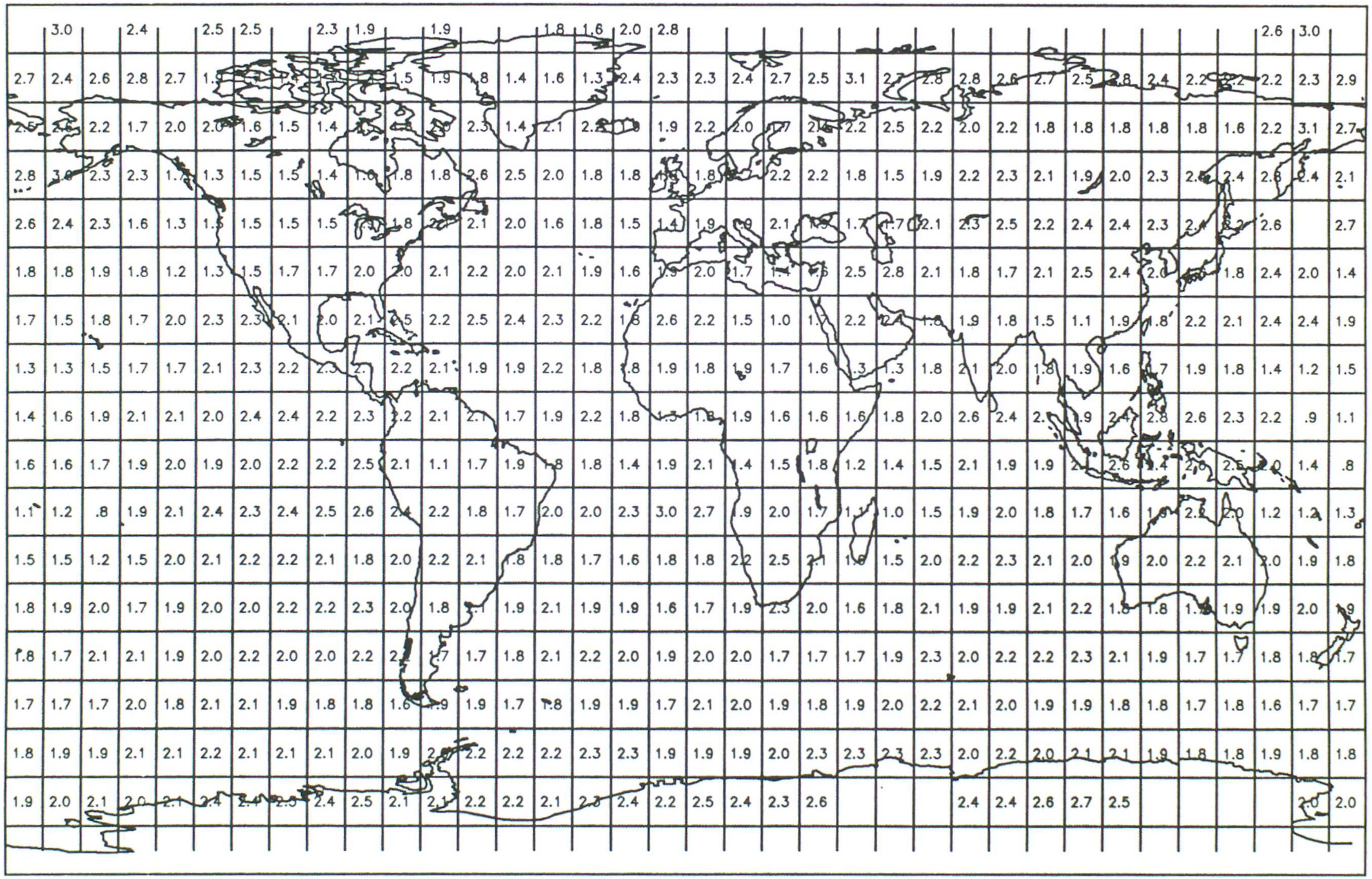


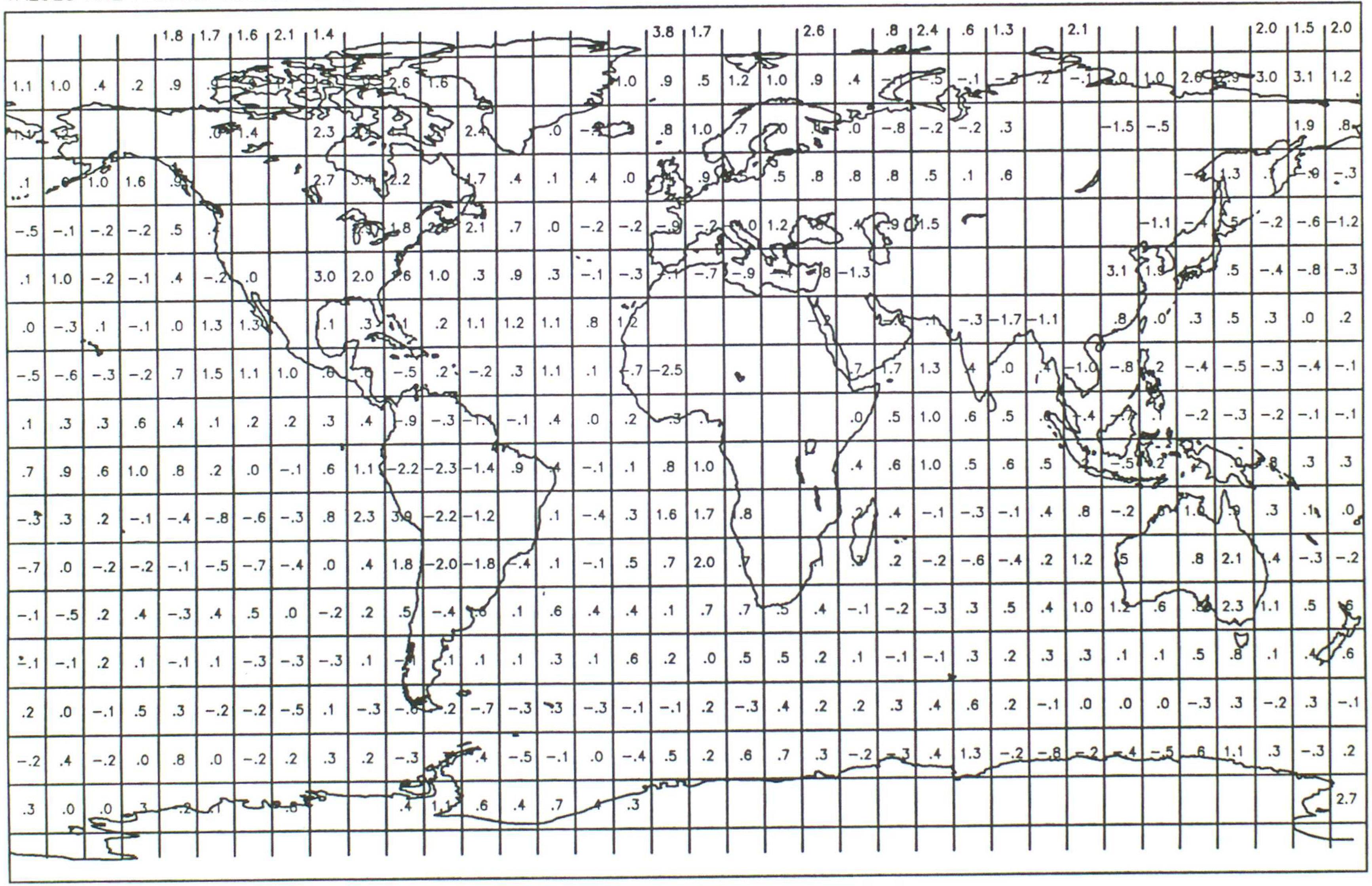
FIGURE 26

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
MARCH 1996 FIGURE 27
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


3.0 2.4 2.5 2.5 2.3 1.9 1.9 1.8 1.6 2.0 2.8 2.6 3.0
2.7 2.4 2.6 2.8 2.7 1.5 1.4 1.5 1.9 1.8 1.4 1.6 1.3 2.4 2.3 2.3 2.4 2.7 2.5 3.1 2.7 2.8 2.8 2.6 2.7 2.5 2.8 2.4 2.2 2.2 2.2 2.3 2.9
2.5 2.6 2.2 1.7 2.0 2.0 1.6 1.5 1.4 2.3 1.4 2.1 2.2 1.9 2.2 2.0 1.7 2.6 2.2 2.5 2.2 2.0 2.2 1.8 1.8 1.8 1.8 1.8 1.6 2.2 3.1 2.7
2.8 3.0 2.3 2.3 1.7 1.3 1.5 1.5 1.4 1.6 1.8 1.8 2.6 2.5 2.0 1.8 1.8 1.8 2.2 2.2 1.8 1.5 1.9 2.2 2.3 2.1 1.9 2.0 2.3 2.6 2.4 2.8 2.4 2.1
2.6 2.4 2.3 1.6 1.3 1.5 1.5 1.5 1.5 1.8 2.1 2.0 1.6 1.8 1.5 1.4 1.9 2.1 1.7 1.7 2.1 2.3 2.5 2.2 2.4 2.4 2.3 2.4 2.2 2.6 2.7
1.8 1.8 1.9 1.8 1.2 1.3 1.5 1.7 1.7 2.0 2.0 2.1 2.2 2.0 2.1 1.9 1.6 1.9 2.0 1.7 1.4 1.5 2.5 2.8 2.1 1.8 1.7 2.1 2.5 2.4 2.0 1.6 1.8 2.4 2.0 1.4
1.7 1.5 1.8 1.7 2.0 2.3 2.3 2.1 2.0 2.1 2.5 2.2 2.5 2.4 2.3 2.2 1.8 2.6 2.2 1.5 1.0 1.7 2.2 2.4 1.8 1.9 1.8 1.5 1.1 1.9 1.8 2.2 2.1 2.4 2.4 1.9
1.3 1.3 1.5 1.7 1.7 2.1 2.3 2.2 2.3 2.2 2.1 1.9 1.9 2.2 1.8 1.8 1.9 1.8 1.9 1.7 1.6 1.3 1.3 1.8 2.1 2.0 1.8 1.9 1.6 1.7 1.9 1.8 1.4 1.2 1.5
1.4 1.6 1.9 2.1 2.1 2.0 2.4 2.4 2.2 2.3 2.2 2.1 2.1 1.7 1.9 2.2 1.8 1.3 1.8 1.9 1.6 1.6 1.6 1.8 2.0 2.6 2.4 1.9 2.4 2.8 2.6 2.3 2.2 .9 1.1
1.6 1.6 1.7 1.9 2.0 1.9 2.0 2.2 2.2 2.5 2.1 1.1 1.7 1.9 1.8 1.8 1.4 1.9 2.1 1.4 1.5 1.8 1.2 1.4 1.5 2.1 1.9 1.9 2.6 2.4 2.6 2.5 2.0 1.4 .8
1.1 1.2 .8 1.9 2.1 2.4 2.3 2.4 2.5 2.6 2.4 2.2 1.8 1.7 2.0 2.0 2.3 3.0 2.7 1.9 2.0 1.7 1.1 1.0 1.5 1.9 2.0 1.8 1.7 1.6 2.2 2.0 1.2 1.2 1.3
1.5 1.5 1.2 1.5 2.0 2.1 2.2 2.2 2.1 1.8 2.0 2.2 2.1 1.8 1.8 1.7 1.6 1.8 1.8 2.2 2.5 2.1 1.6 1.5 2.0 2.2 2.3 2.1 2.0 1.9 2.0 2.2 2.1 2.0 1.9 1.8
1.8 1.9 2.0 1.7 1.9 2.0 2.0 2.2 2.2 2.3 2.0 1.8 2.1 1.9 2.1 1.9 1.9 1.6 1.7 1.9 2.3 2.0 1.6 1.8 2.1 1.9 1.9 2.1 2.2 1.8 1.8 1.8 1.9 1.9 2.0 1.9
1.8 1.7 2.1 2.1 1.9 2.0 2.2 2.0 2.0 2.2 2.1 1.7 1.7 1.8 2.1 2.2 2.0 1.9 2.0 2.0 1.7 1.7 1.7 1.9 2.3 2.0 2.2 2.2 2.3 2.1 1.9 1.7 1.7 1.8 1.8 1.7
1.7 1.7 1.7 2.0 1.8 2.1 2.1 1.9 1.8 1.8 1.6 1.9 1.9 1.7 1.8 1.9 1.9 1.7 2.1 2.0 1.9 1.8 1.9 2.0 2.2 2.1 2.0 1.9 1.9 1.8 1.8 1.7 1.8 1.6 1.7 1.7
1.8 1.9 1.9 2.1 2.1 2.2 2.1 2.1 2.1 2.0 1.9 2.2 2.2 2.2 2.3 2.3 1.9 1.9 1.9 2.0 2.3 2.3 2.3 2.3 2.0 2.2 2.0 2.1 2.1 1.9 1.8 1.8 1.9 1.8 1.8
1.9 2.0 2.1 2.0 2.1 2.4 2.4 2.5 2.4 2.5 2.1 2.1 2.2 2.2 2.1 2.3 2.4 2.2 2.5 2.4 2.3 2.6 2.4 2.4 2.6 2.7 2.5 2.0 2.0

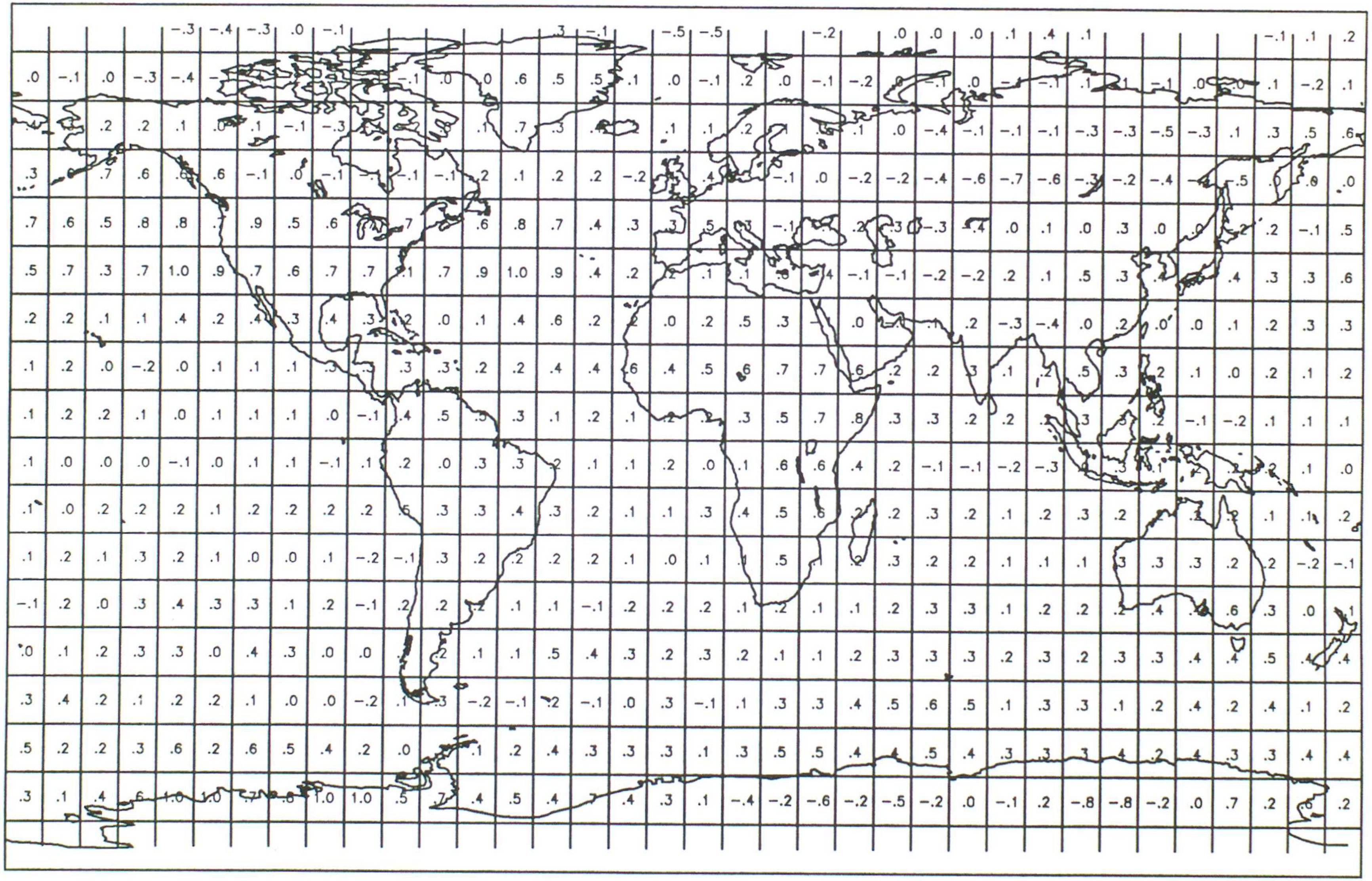
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
MARCH 1996
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 28


1.8 1.7 1.6 2.1 1.4 3.8 1.7 2.6 .8 2.4 .6 1.3 2.1 2.0 1.5 2.0
1.1 1.0 .4 .2 .9 2.6 1.6 1.0 .9 .5 1.2 1.0 .9 .4 -.5 -.1 .2 1.0 2.6 3.0 3.1 1.2
.0 1.4 2.3 2.4 .0 .8 1.0 .7 .0 -.8 -.2 -.2 .3 -1.5 -.5 1.9 .8
.1 1.0 1.6 2.7 2.2 1.7 .4 .1 .4 .0 .9 .5 .8 .8 .8 .5 .1 .6 1.3 -.3
-.5 -.1 -.2 -.2 .5 1.8 2.1 .7 .0 -.2 -.2 -.9 -.2 .0 1.2 .4 .9 1.5 -1.1 .5 -.2 -.6 -1.2
.1 1.0 -.2 -.1 .4 -.2 .0 3.0 2.0 .6 1.0 .3 .9 .3 -.1 -.3 -.7 -.9 .8 -1.3 3.1 1.9 .5 -.4 -.8 -.3
.0 -.3 .1 -.1 .0 1.3 1.3 .1 .3 .1 .2 1.1 1.2 1.1 .8 1.2 -.3 -1.7 -1.1 .8 .0 .3 .5 .3 .0 .2
-.5 -.6 -.3 -.2 .7 1.5 1.1 1.0 -.5 .2 -.2 .3 1.1 .1 -.7 -2.5 .7 1.7 1.3 .4 .0 .4 -1.0 -.8 .2 -.4 -.5 -.3 -.4 -.1
.1 .3 .3 .6 .4 .1 .2 .2 .3 .4 -.9 -.3 -.1 .4 .0 .2 .3 .0 .5 1.0 .6 .5 -.4 .1 -.2 -.3 -.2 -.1 -.1
.7 .9 .6 1.0 .8 .2 .0 -.1 .6 1.1 -2.2 -2.3 -1.4 .9 .4 -.1 .1 .8 1.0 .4 .6 1.0 .5 .6 .5 -.5 .2 .8 .3 .3
-.3 .3 .2 -.1 -.4 -.8 -.6 -.3 .8 2.3 3.9 -2.2 -1.2 .1 -.4 .3 1.6 1.7 .8 .2 .4 -.1 -.3 -.1 .4 .8 -.2 1.0 .9 .3 .1 .0
-.7 .0 -.2 -.2 -.1 -.5 -.7 -.4 .0 .4 1.8 -2.0 -1.8 -.4 .1 -.1 .5 .7 2.0 .7 .2 -.2 -.6 -.4 .2 1.2 .5 .8 2.1 .4 -.3 -.2
-.1 -.5 .2 .4 -.3 .4 .5 .0 -.2 .2 .5 -.4 .1 .6 .4 .4 .1 .7 .7 .5 .4 -.1 -.2 -.3 .3 .5 .4 1.0 1.2 .6 .8 2.3 1.1 .5 .6
-.1 -.1 .2 .1 -.1 .1 -.3 -.3 -.3 .1 -.1 .1 .1 .1 .3 .1 .6 .2 .0 .5 .5 .2 .1 -.1 -.1 .3 .2 .3 .3 .1 .1 .5 .8 .1 .4 .6
.2 .0 -.1 .5 .3 -.2 -.2 -.5 .1 -.3 -.6 .2 -.7 -.3 .3 -.3 -.1 -.1 .2 -.3 .4 .2 .2 .3 .4 .6 .2 -.1 .0 .0 .0 -.3 .3 -.2 .3 -.1
-.2 .4 -.2 .0 .8 .0 -.2 .2 .3 .2 -.3 .4 -.5 -.1 .0 -.4 .5 .2 .6 .7 .3 -.2 -.3 .4 1.3 -.2 -.8 -.2 -.4 -.5 .6 1.1 .3 -.3 .2
.3 .0 .0 .3 .2 .1 .6 .4 1.1 .6 .4 .7 .4 .3 2.7

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
MARCH 1996
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 29



–.3 –.4 –.3 .0 –.1 .3 –.1 –.5 –.5 –.2 .0 .0 .0 .1 .4 .1 –.1 .1 .2
.0 –.1 .0 –.3 –.4 –.1 .0 .0 .6 .5 .5 .1 .0 –.1 .2 .0 –.1 –.2 .0 –.1 .0 –.1 –.1 .1 .1 –.1 .0 .0 .1 –.2 .1
.2 .2 .1 .0 .1 –.1 –.3 .1 .7 .3 .4 .1 .1 .2 .1 .1 .0 –.4 –.1 –.1 –.1 –.3 –.3 –.5 –.3 .1 .3 .5 .6
.3 .7 .6 .6 .6 –.1 .0 –.1 –.1 –.1 .2 .1 .2 .2 –.2 .4 –.1 .0 –.2 –.2 –.4 –.6 –.7 –.6 –.3 –.2 –.4 –.4 –.5 .0 .0 .0
.7 .6 .5 .8 .8 .7 .9 .5 .6 .7 .6 .8 .7 .4 .3 .3 .5 .3 –.1 .2 .3 –.3 .4 .0 .1 .0 .3 .0 .0 .2 .2 –.1 .5
.5 .7 .3 .7 1.0 .9 .7 .6 .7 .7 .1 .7 .9 1.0 .9 .4 .2 .2 .1 .1 .0 .4 –.1 –.1 –.2 –.2 .2 .1 .5 .3 .4 .4 .3 .3 .6
.2 .2 .1 .1 .4 .2 .4 .3 .4 .3 .2 .0 .1 .4 .6 .2 .2 .0 .2 .5 .3 .0 .1 .2 –.3 –.4 .0 .2 .0 .0 .1 .2 .3 .3
.1 .2 .0 –.2 .0 .1 .1 .1 .3 .3 .3 .3 .2 .2 .4 .4 .6 .4 .5 .6 .7 .7 .6 .2 .2 .3 .1 .2 .5 .3 .2 .1 .0 .2 .1 .2
.1 .2 .2 .1 .0 .1 .1 .1 .0 –.1 .4 .5 .5 .3 .1 .2 .1 .2 .2 .3 .5 .7 .8 .3 .3 .2 .2 .3 .3 .3 .2 –.1 –.2 .1 .1 .1
.1 .0 .0 .0 –.1 .0 .1 .1 –.1 .1 .2 .0 .3 .3 .2 .1 .1 .2 .0 .1 .6 .6 .4 .2 –.1 –.1 –.2 –.3 .0 .3 .1 .2 .2 .2 .1 .0
.1 .0 .2 .2 .2 .1 .2 .2 .2 .2 .5 .3 .3 .4 .3 .2 .1 .1 .3 .4 .5 .6 .2 .2 .3 .2 .1 .2 .3 .2 .2 .3 .2 .1 .1 .2
.1 .2 .1 .3 .2 .1 .0 .0 .1 –.2 –.1 .3 .2 .2 .2 .2 .1 .0 .1 .1 .5 .1 .2 .3 .2 .2 .1 .1 .1 .3 .3 .3 .2 .2 –.2 –.1
–.1 .2 .0 .3 .4 .3 .3 .1 .2 –.1 .2 .2 .2 .1 .1 –.1 .2 .2 .2 .1 .2 .1 .1 .2 .3 .3 .1 .2 .2 .2 .4 .4 .6 .3 .0 .1
.0 .1 .2 .3 .3 .0 .4 .3 .0 .0 .2 .1 .1 .5 .4 .3 .2 .3 .2 .1 .1 .2 .3 .3 .3 .2 .3 .2 .3 .3 .4 .4 .5 .4 .4
.3 .4 .2 .1 .2 .2 .1 .0 .0 –.2 .1 .3 –.2 –.1 .2 –.1 .0 .3 –.1 .1 .3 .3 .4 .5 .6 .5 .1 .3 .3 .1 .2 .4 .2 .4 .1 .2
.5 .2 .2 .3 .6 .2 .6 .5 .4 .2 .0 .1 .2 .4 .3 .3 .3 .1 .3 .5 .5 .4 .4 .5 .4 .3 .3 .3 .4 .2 .4 .3 .3 .4 .4
.3 .1 .4 .6 1.0 1.0 .7 .8 1.0 1.0 .5 .7 .4 .5 .4 .7 .4 .3 .1 –.4 –.2 –.6 –.2 –.5 –.2 .0 –.1 .2 –.8 –.8 –.2 .0 .7 .2 .6 .2

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
MARCH 1996
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 30

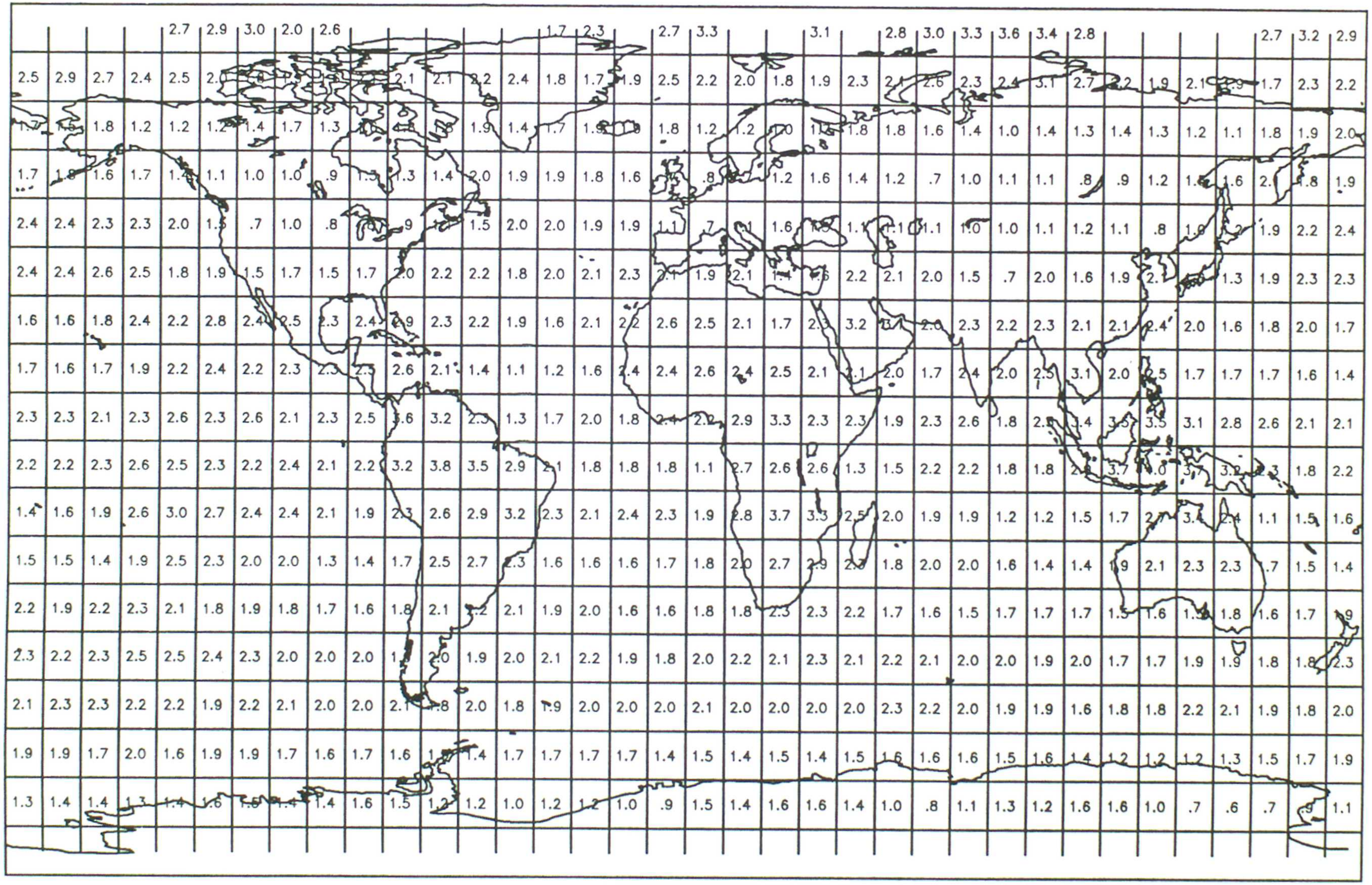


TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
25565	59.1	-29.8	ALL	MSLP	SUR	661	0	0	1.7	0.3	1.7
29603	30.5	-46.5	ALL	MSLP	SUR	17	0	0	1.2	-0.2	1.2
39603	27.0	-51.7	ALL	MSLP	SUR	20	0	0	1.0	-0.5	1.1
40704	47.3	-21.9	ALL	MSLP	SUR	2	0	0	1.1	-0.7	1.4
40705	45.7	-32.3	ALL	MSLP	SUR	1	0	0	0.0	1.1	1.1
40803	47.9	-17.8	ALL	MSLP	SUR	2	0	0	0.8	-0.2	0.9
40804	47.9	-17.9	ALL	MSLP	SUR	1	0	0	0.0	1.3	1.3
40805	47.1	-23.0	ALL	MSLP	SUR	1	0	0	0.0	0.9	0.9
40807	46.5	-25.9	ALL	MSLP	SUR	2	0	0	0.6	0.8	1.1
41526	35.1	-57.2	ALL	MSLP	SUR	246	0	0	1.0	0.2	1.0
41585	38.8	-56.7	ALL	MSLP	SUR	287	0	0	1.3	-0.2	1.3
44613	45.1	-12.4	ALL	MSLP	SUR	1296	6	0	1.4	-0.3	1.5
44616	61.2	-20.8	ALL	MSLP	SUR	1836	6	0	1.3	0.9	1.6
44684	47.5	-61.8	ALL	MSLP	SUR	313	0	0	2.2	0.1	2.2
44690	45.9	-62.7	ALL	MSLP	SUR	288	3	1	1.8	-2.0	2.6
44692	53.0	-55.5	ALL	MSLP	SUR	151	2	1	1.5	-0.9	1.7
44727	42.2	-21.7	ALL	MSLP	SUR	1247	5	0	1.4	-0.3	1.4
44728	59.7	-25.1	ALL	MSLP	SUR	1667	7	0	1.5	0.4	1.5
44760	24.8	-31.7	ALL	MSLP	SUR	355	1	0	0.9	0.0	0.9
44761	56.0	-44.1	ALL	MSLP	SUR	466	241	52	4.5	-1.4	4.8
44763	57.2	-31.9	ALL	MSLP	SUR	1858	2	0	1.5	0.2	1.6
44765	58.6	-22.5	ALL	MSLP	SUR	1623	8	0	1.4	-0.2	1.4
44767	55.2	-37.6	ALL	MSLP	SUR	1625	6	0	1.8	0.1	1.8
44768	59.6	-28.8	ALL	MSLP	SUR	1899	6	0	1.6	0.5	1.6
44769	54.4	-21.6	ALL	MSLP	SUR	1783	2	0	1.4	0.2	1.4
44770	26.0	-41.8	ALL	MSLP	SUR	586	4	1	1.0	0.2	1.0
44771	52.3	-40.3	ALL	MSLP	SUR	1192	4	0	1.4	-0.1	1.4
44773	51.4	-19.9	ALL	MSLP	SUR	1181	5	0	1.4	0.0	1.4
44774	52.8	-37.1	ALL	MSLP	SUR	1625	1	0	1.7	0.0	1.7
44777	24.7	-32.2	ALL	MSLP	SUR	229	0	0	1.0	-3.1	3.3
44911	52.1	-47.7	ALL	MSLP	SUR	31	0	0	1.6	0.7	1.7
49603	39.6	-61.7	ALL	MSLP	SUR	14	0	0	0.7	-0.8	1.1
62501	52.0	-20.4	ALL	MSLP	SUR	680	0	0	1.3	0.5	1.4
62503	43.6	-17.7	ALL	MSLP	SUR	582	0	0	1.3	0.0	1.3
62504	44.9	-11.7	ALL	MSLP	SUR	600	0	0	1.1	0.1	1.1
62505	47.0	-19.3	ALL	MSLP	SUR	582	3	1	1.7	-0.1	1.7
62506	49.4	-20.1	ALL	MSLP	SUR	477	23	5	2.9	0.5	2.9
62507	46.9	-18.1	ALL	MSLP	SUR	21	0	0	4.4	-5.5	7.0
62508	49.6	-20.4	ALL	MSLP	SUR	692	0	0	1.4	0.5	1.5
62510	46.7	-18.9	ALL	MSLP	SUR	626	0	0	1.4	0.3	1.4
62512	44.1	-19.6	ALL	MSLP	SUR	606	0	0	1.4	0.5	1.5
62694	62.1	-39.7	ALL	MSLP	SUR	1763	8	0	1.9	0.1	1.9
62910	57.5	-36.2	ALL	MSLP	SUR	31	0	0	0.9	0.8	1.2
63665	66.6	-32.1	ALL	MSLP	SUR	637	0	0	1.7	-0.2	1.7
64934	63.2	-27.2	ALL	MSLP	SUR	69	0	0	0.8	0.3	0.8
65594	61.4	-31.0	ALL	MSLP	SUR	1927	2	0	1.7	0.3	1.7
65595	59.1	-39.8	ALL	MSLP	SUR	632	0	0	1.0	0.0	1.0
71608	44.8	-66.7	ALL	MSLP	SUR	1	0	0	0.0	-0.6	0.6
WIND SPEED											
29603	30.5	-46.5	ALL	SPEED	SUR	16	0	0	2.6	0.2	2.6
39603	27.0	-51.7	ALL	SPEED	SUR	20	0	0	2.4	0.6	2.5
40704	47.3	-21.9	ALL	SPEED	SUR	2	0	0	2.7	-2.4	3.6
40705	45.7	-32.3	ALL	SPEED	SUR	1	0	0	0.0	-4.5	4.5
40803	47.9	-17.8	ALL	SPEED	SUR	2	0	0	0.7	0.8	1.1
40804	47.9	-17.9	ALL	SPEED	SUR	1	0	0	0.0	-2.0	2.0
40805	47.1	-23.0	ALL	SPEED	SUR	1	0	0	0.0	2.6	2.6
40807	46.5	-25.9	ALL	SPEED	SUR	2	0	0	0.1	5.1	5.1
41526	35.1	-57.2	ALL	SPEED	SUR	241	0	0	2.3	-3.3	4.0
44613	45.1	-12.4	ALL	SPEED	SUR	1224	4	0	2.3	-2.9	3.7

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
44616	61.2	-20.8	ALL	SPEED	SUR	13	0	0	8.9	-7.7	11.8
44770	26.0	-41.8	ALL	SPEED	SUR	1	0	0	0.0	-6.0	6.0
44771	52.3	-40.3	ALL	SPEED	SUR	2	0	0	2.3	-3.4	4.1
49603	39.6	-61.7	ALL	SPEED	SUR	15	0	0	5.2	4.1	6.7
62503	43.6	-17.7	ALL	SPEED	SUR	1	1	100	0.0	0.0	0.0
62505	47.0	-19.3	ALL	SPEED	SUR	321	12	4	5.8	8.0	9.9
62506	49.4	-20.1	ALL	SPEED	SUR	126	0	0	2.7	-5.0	5.7
62694	62.1	-39.7	ALL	SPEED	SUR	1	0	0	0.0	-16.5	16.5
WIND DIRECTION											
29603	30.5	-46.5	ALL	DIRN.	SUR	16	0	0	18.1	-4.6	18.6
39603	27.0	-51.7	ALL	DIRN.	SUR	17	0	0	21.1	0.9	21.1
40704	47.3	-21.9	ALL	DIRN.	SUR	2	0	0	28.2	-26.5	38.7
40705	45.7	-32.3	ALL	DIRN.	SUR	1	0	0	0.0	4.9	4.9
40803	47.9	-17.8	ALL	DIRN.	SUR	2	0	0	0.9	-9.8	9.9
40804	47.9	-17.9	ALL	DIRN.	SUR	1	0	0	0.0	33.0	33.0
40805	47.1	-23.0	ALL	DIRN.	SUR	1	0	0	0.0	9.5	9.5
40807	46.5	-25.9	ALL	DIRN.	SUR	2	0	0	5.7	8.5	10.3
41526	35.1	-57.2	ALL	DIRN.	SUR	221	0	0	17.8	4.4	18.4
44613	45.1	-12.4	ALL	DIRN.	SUR	1039	4	0	22.6	-5.5	23.2
44616	61.2	-20.8	ALL	DIRN.	SUR	13	0	0	31.1	33.3	45.6
44770	26.0	-41.8	ALL	DIRN.	SUR	1	0	0	0.0	-45.5	45.5
44771	52.3	-40.3	ALL	DIRN.	SUR	2	0	0	135.0	12.1	135.6
49603	39.6	-61.7	ALL	DIRN.	SUR	14	0	0	26.0	1.3	26.1
62503	43.6	-17.7	ALL	DIRN.	SUR	1	1	100	0.0	0.0	0.0
62505	47.0	-19.3	ALL	DIRN.	SUR	306	12	4	23.9	-27.7	36.6
62506	49.4	-20.1	ALL	DIRN.	SUR	90	0	0	23.4	11.8	26.2
62694	62.1	-39.7	ALL	DIRN.	SUR	1	0	0	0.0	-167.2	167.2

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in $\mathrm{m\ s^{-1}}$

Parameters monitored

- :N REP. :Number of observations received excluding duplicates.
- :PG :Percentage of observations with gross errors.
- :PR :Percentage of observations rejected by quality control including rejections from the duplicate check.
- :PC :Percentage of observations with calm winds.
- :RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
- :BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 $\mathrm{m\ s^{-1}}$ Vector Wind

SELECTION CRITERIA :N REP ≥ 20

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3139	0	1	1.8	-0.3	3187	0	2	0	7.7	1.0
AAN	95	0	2	2.4	-0.8	94	0	0	1	9.0	0.7
ACA	830	0	1	1.8	-0.1	865	0	2	0	7.5	0.8
AEA	383	6	100	3.7	0.9	381	0	4	0	9.5	1.1
AEL	574	1	4	2.2	-0.1	595	0	4	0	8.3	1.4
AFL	117	3	100	3.3	1.3	117	0	8	1	13.7	0.2
AFR	883	1	5	2.0	-0.4	917	0	5	0	7.9	0.8
AIC	25	0	8	2.9	0.0	25	0	16	0	18.2	9.5
AIH	60	0	3	1.8	0.1	61	0	2	0	8.5	1.6
AMX	124	0	2	1.9	-0.3	130	2	5	0	8.3	0.5
AMY	91	0	3	2.1	-1.0	96	0	4	0	8.2	0.7
ANZ	211	0	3	2.0	-0.9	209	0	3	0	7.5	0.0
AOM	295	0	2	1.9	0.7	311	0	3	0	8.3	1.6
AUA	76	1	12	2.1	-0.6	78	0	12	0	7.6	1.2
AVA	124	0	2	2.1	-0.2	132	0	5	0	9.6	2.4
AZA	332	3	7	2.3	0.3	347	0	4	0	8.0	0.3
BAL	159	0	19	2.1	0.0	162	0	19	0	8.5	0.7
BAW	1225	0	2	1.9	-0.3	1246	0	4	0	7.8	1.1
BBB	20	0	0	1.7	0.0	21	0	0	0	8.1	3.4
BBC	22	5	23	4.3	1.9	22	0	9	0	5.3	1.2
BWA	134	0	4	2.6	1.2	143	0	5	1	8.2	1.3
CDN	791	0	1	1.6	0.4	798	0	3	0	8.1	1.0
CFG	608	0	1	2.2	-1.1	639	0	2	0	8.1	1.1
CKS	23	0	9	2.5	0.1	23	0	13	0	9.4	0.9
CKT	31	0	6	1.3	0.7	34	0	6	0	6.4	1.1
CLX	93	0	1	1.7	-0.7	97	0	2	1	6.8	0.6
COA	417	1	3	2.0	0.7	423	0	3	0	9.0	0.9
CRL	185	1	2	2.1	0.4	191	0	2	1	8.8	1.0
CTM	31	0	19	2.7	-1.6	32	0	19	0	6.7	2.0
CUB	202	0	100	2.3	0.9	206	0	100	0	13.2	3.0
DAF	28	0	7	3.4	-2.2	28	0	7	0	12.4	1.3
DAL	2161	1	1	1.8	0.2	2204	0	2	0	8.1	1.1
DHL	412	1	100	3.6	-1.5	410	0	4	0	9.2	1.0
DLH	1987	0	8	2.3	0.6	2023	0	8	1	7.2	1.2
DOA	95	1	22	2.1	0.9	98	0	24	0	11.3	2.6
EIA	36	0	14	1.7	-0.7	37	0	14	0	9.0	-0.1
ELY	145	0	4	1.9	-0.4	154	0	7	0	8.8	0.4
EWW	119	0	100	2.3	0.6	125	0	100	1	12.1	1.6
FDX	559	1	3	1.7	0.4	573	0	4	0	8.9	1.9
FIN	357	0	2	1.8	0.3	356	0	3	0	9.0	0.9
GAF	63	0	0	1.8	0.6	63	0	2	2	6.7	1.1
GTI	72	0	3	2.0	-0.3	73	0	5	0	9.8	-0.1
HLA	22	0	0	2.0	0.0	22	0	14	0	15.3	5.5
HLF	61	0	2	2.5	-1.0	62	0	3	0	7.8	0.1
IBE	1013	1	20	2.6	-0.1	1026	0	21	0	9.5	1.4
ICE	467	0	1	1.6	-0.4	464	0	2	0	8.4	0.8
JAL	26	0	0	2.2	0.6	26	0	0	0	7.8	-0.5
KAC	21	0	0	1.5	-1.0	22	0	0	0	6.7	1.4
KLM	1659	0	2	1.8	0.1	1694	0	2	0	8.0	1.0
LDA	139	0	12	2.3	-1.0	145	0	14	0	7.7	-0.5
LDI	162	0	4	2.2	-1.4	168	0	5	0	7.4	0.6
LIB	235	0	4	2.0	0.7	241	0	8	1	9.1	1.1
LOT	192	1	1	1.9	-0.5	193	0	0	0	6.4	0.2
LTU	418	0	1	1.6	0.3	427	0	4	0	8.8	1.9
MAH	27	0	7	2.1	-1.5	29	0	7	0	6.3	1.8
MPH	504	0	2	2.0	-0.8	511	0	2	0	8.2	0.9
NWA	2124	0	1	2.0	1.0	2169	0	2	1	8.3	1.0
OAL	40	0	8	2.2	1.6	43	0	5	0	7.4	3.2
OOE	21	0	10	3.2	2.8	23	0	13	0	9.3	4.4

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RAF	32	0	0	1.4	0.3	32	0	0	0	9.2	0.4
RJA	48	0	2	2.0	0.6	51	0	0	0	4.8	0.4
RRR	85	5	36	2.2	0.1	89	0	36	0	10.2	0.9
SAB	75	0	1	1.8	-0.1	76	0	1	0	7.0	1.3
SAS	959	0	1	1.6	-0.2	960	0	2	0	8.5	0.8
SIA	102	0	5	2.4	-1.2	104	0	6	0	9.5	1.7
SPP	21	0	14	2.2	-0.6	21	0	10	0	6.5	-0.3
SVA	84	0	1	2.0	0.9	98	0	2	0	8.0	1.6
SWR	157	1	1	2.0	0.4	162	0	4	1	10.0	0.9
TAP	302	0	12	2.0	-0.3	301	1	13	0	9.1	1.6
TEJ	82	0	24	1.8	0.0	82	0	28	0	12.6	1.5
TOW	84	0	2	1.9	-0.7	86	0	3	1	6.8	-0.3
TWA	1214	0	1	2.1	0.0	1223	0	2	0	8.3	1.3
UAL	1443	1	2	2.3	-0.7	1466	0	1	0	7.3	0.8
ULE	114	1	4	1.8	0.2	113	0	6	2	9.3	1.5
UPS	530	0	17	1.8	0.1	543	0	17	0	7.7	0.9
USA	130	0	2	1.9	-0.9	133	0	2	0	7.1	1.2
VIA	124	0	4	2.1	0.9	129	0	7	0	10.6	1.2
VIR	143	1	2	1.9	-0.4	153	0	2	0	7.2	0.0
WOA	100	0	10	2.1	0.3	102	0	10	0	7.5	1.9
BA	8284	0	17	1.4	0.3	8284	0	17	0	6.5	1.1
KL	3934	1	14	1.5	0.4	3932	0	14	0	6.8	1.5
MF	51	0	6	2.4	-0.8	53	0	0	0	5.9	1.1
MR	24	0	0	1.5	-0.3	24	0	0	0	8.5	2.5
M	168	5	100	3.3	0.9	175	0	100	0	12.7	3.5
N	208	2	5	2.7	1.1	214	0	5	0	10.0	0.0

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	2	0	2.5	8.9	-8.5
DBLK	00	Z	100	1	0	0.0	23.0	-23.0
DBND	00	Z	100	5	0	17.2	51.9	49.0
DBND	12	Z	100	5	0	14.7	54.8	52.8
EHOA	12	Z	100	16	0	16.7	19.6	10.2
FNOR	00	Z	100	8	0	27.6	53.7	46.0
FNOR	12	Z	100	7	0	18.2	36.5	31.6
FNOU	00	Z	100	4	0	25.3	31.1	18.0
FNOU	12	Z	100	4	0	12.2	17.8	13.0
FNPH	00	Z	100	8	0	24.7	28.5	14.1
FNPH	12	Z	100	7	0	22.2	22.5	-3.6
FNR	00	Z	100	1	0	0.0	13.0	-13.0
FNRS	00	Z	100	8	0	28.2	35.4	21.4
FNRS	12	Z	100	7	0	46.6	51.7	22.4
GACA	00	Z	100	31	0	16.2	27.2	21.8
GACA	12	Z	100	30	0	15.8	22.8	16.4
JGQH	00	Z	100	1	0	0.0	40.0	40.0
LDWR	00	Z	100	29	0	18.3	19.0	-4.9
LDWR	12	Z	100	28	0	18.1	18.1	0.4
NPH	00	Z	100	1	0	0.0	27.0	-27.0
OXYH2	00	Z	100	13	0	27.2	27.4	3.3
OXYH2	12	Z	100	11	0	82.8	83.8	-12.5
SHIPAF	00	Z	100	4	0	17.0	32.8	28.0
SHIPAF	12	Z	100	5	0	19.1	56.7	53.4
SHIPC	00	Z	100	1	0	0.0	3.0	3.0
SHIPS	00	Z	100	3	0	20.9	36.0	29.3
SHIPS	12	Z	100	2	0	3.5	52.6	52.5
UQYC	00	Z	100	2	0	5.0	31.4	31.0
V2EZ	00	Z	100	8	0	13.1	33.0	30.3
V2EZ	12	Z	100	10	0	10.5	30.4	28.6
V2GH	00	Z	100	18	0	23.9	30.8	19.4
V2GH	12	Z	100	13	0	14.7	18.3	10.8
V2LV	00	Z	100	27	0	14.7	24.7	19.9
V2LV	12	Z	100	27	1	18.0	23.5	15.1
03953	00	Z	100	31	0	10.2	25.0	22.8
03953	12	Z	100	31	0	11.1	24.4	21.8
04018	00	Z	100	30	0	23.1	30.7	20.3
04018	12	Z	100	30	0	27.9	35.8	22.4
04220	00	Z	100	29	0	23.8	23.8	-0.3
04220	12	Z	100	31	0	18.2	18.5	3.3
04270	00	Z	100	29	0	19.8	25.1	15.4
04270	12	Z	100	30	0	22.7	25.2	11.0
04339	00	Z	100	28	0	19.3	19.6	-3.3
04339	12	Z	100	30	0	20.3	20.4	2.6
04360	00	Z	100	28	0	23.0	23.5	4.7
04360	12	Z	100	30	0	18.5	20.6	9.1
08001	00	Z	100	28	0	13.9	23.4	18.9
08001	12	Z	100	30	0	30.5	33.5	13.9
08508	00	Z	100	26	0	25.5	45.5	37.7
08508	12	Z	100	29	1	27.0	39.8	29.3
08594	12	Z	100	26	0	17.0	17.1	1.2
60020	00	Z	100	30	0	18.8	26.6	18.9
60020	12	Z	100	30	0	19.2	21.4	9.3
71600	00	Z	100	30	0	22.4	48.9	43.5
71600	12	Z	100	30	0	24.6	42.2	34.3
72201	00	Z	100	27	0	23.2	50.3	44.7
72201	12	Z	100	26	2	17.0	47.4	44.3
72402	00	Z	100	26	0	18.3	49.0	45.5
72402	12	Z	100	27	0	19.5	59.2	55.9
74494	00	Z	100	20	0	15.2	20.2	13.3
74494	12	Z	100	28	0	19.7	42.6	37.8
78016	12	Z	100	27	0	14.0	27.1	23.1

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	2	0	5.0	14.9	14.0
DBLK	00	Z	500	1	0	0.0	0.0	0.0
DBND	00	Z	500	5	0	11.6	19.3	15.4
DBND	12	Z	500	5	0	9.3	17.0	14.2
EHOA	00	Z	500	1	0	0.0	2.0	-2.0
EHOA	12	Z	500	18	0	12.5	16.1	10.2
FNOR	00	Z	500	14	0	12.2	13.8	6.3
FNOR	12	Z	500	12	0	11.2	11.4	2.2
FNOU	00	Z	500	5	0	16.3	16.8	4.2
FNOU	12	Z	500	6	0	17.7	17.8	-1.5
FNPH	00	Z	500	9	0	10.4	11.1	-4.0
FNPH	12	Z	500	7	0	12.8	14.5	-6.9
FNR	00	Z	500	1	0	0.0	1.0	1.0
FNRS	00	Z	500	10	0	8.3	9.0	3.5
FNRS	12	Z	500	9	0	14.3	14.8	3.9
GACA	00	Z	500	31	0	12.4	13.3	4.7
GACA	12	Z	500	30	0	14.6	15.0	3.3
JGQH	00	Z	500	1	0	0.0	8.0	8.0
LDWR	00	Z	500	29	0	20.3	20.4	-1.9
LDWR	12	Z	500	28	0	14.8	14.8	1.2
NPH	00	Z	500	1	0	0.0	28.0	-28.0
OXYH2	00	Z	500	12	0	21.8	22.4	-5.3
OXYH2	12	Z	500	11	1	15.5	16.8	-6.4
SHIPAF	00	Z	500	6	0	9.9	12.2	7.2
SHIPAF	12	Z	500	6	0	7.3	9.9	6.7
SHIPC	00	Z	500	1	0	0.0	6.0	6.0
SHIPS	00	Z	500	6	0	4.5	9.5	8.3
SHIPS	12	Z	500	3	0	16.0	16.9	5.3
UQYC	00	Z	500	2	0	9.0	16.6	-14.0
VNAA	00	Z	500	1	0	0.0	1.0	1.0
V2EZ	00	Z	500	8	0	9.8	11.8	6.5
V2EZ	12	Z	500	10	0	8.8	8.9	-0.6
V2GH	00	Z	500	22	0	12.4	12.8	3.1
V2GH	12	Z	500	17	0	13.6	14.4	-4.9
V2LV	00	Z	500	31	0	11.6	12.0	3.2
V2LV	12	Z	500	30	0	13.3	13.7	3.5
03953	00	Z	500	31	0	12.7	13.5	4.5
03953	12	Z	500	31	0	10.5	11.0	3.2
04018	00	Z	500	31	0	13.5	17.0	10.4
04018	12	Z	500	31	0	14.5	18.1	10.9
04220	00	Z	500	28	0	13.9	13.9	0.8
04220	12	Z	500	31	0	15.2	15.6	-3.6
04270	00	Z	500	30	0	14.3	17.7	10.3
04270	12	Z	500	31	0	22.9	24.1	7.3
04339	00	Z	500	29	0	28.5	29.3	-6.8
04339	12	Z	500	31	0	20.6	21.1	-4.5
04360	00	Z	500	28	0	14.9	15.0	-1.6
04360	12	Z	500	30	0	15.4	15.7	3.2
08001	00	Z	500	28	0	13.1	13.1	0.6
08001	12	Z	500	30	0	19.7	20.2	-4.7
08508	00	Z	500	29	0	15.9	16.1	2.1
08508	12	Z	500	29	0	12.9	12.9	-0.6
08594	12	Z	500	27	0	18.2	19.5	6.9
60020	00	Z	500	30	0	14.4	18.6	11.7
60020	12	Z	500	30	0	17.2	19.2	8.5
71600	00	Z	500	30	0	14.0	19.3	13.2
71600	12	Z	500	30	0	14.4	18.2	11.1
72201	00	Z	500	30	0	15.5	24.2	18.6
72201	12	Z	500	31	0	23.5	29.1	17.1
72402	00	Z	500	30	0	13.1	21.4	17.0
72402	12	Z	500	31	0	12.5	18.1	13.0
74494	00	Z	500	30	0	14.2	14.2	0.9
74494	12	Z	500	29	0	15.3	15.3	0.9
78016	12	Z	500	28	0	10.3	10.3	0.5

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	2	0	0	8.2	0.3	-0.7
DBLK	00	V	100	1	0	0	3.0	0.4	-0.2
DBND	00	V	100	5	0	0	2.7	3.1	2.4
DBND	12	V	100	3	0	0	2.7	-1.4	-0.9
EHOA	12	V	100	15	0	0	2.7	-2.7	2.5
FNOR	00	V	100	8	0	0	4.1	-0.5	-1.1
FNOR	12	V	100	7	0	0	4.1	-2.3	1.0
FNOU	00	V	100	4	0	0	4.1	-1.5	1.6
FNOU	12	V	100	4	0	0	4.1	-3.3	0.3
FNPH	00	V	100	8	0	0	4.1	-1.6	-1.6
FNPH	12	V	100	7	0	0	4.1	-4.0	-2.0
FNR	00	V	100	1	0	0	4.1	-5.4	4.8
FNRS	00	V	100	8	0	0	4.1	-0.6	-2.4
FNRS	12	V	100	7	0	14	4.1	-7.3	3.2
GACA	00	V	100	31	0	0	4.1	0.7	-0.9
GACA	12	V	100	30	0	0	2.5	-0.5	-0.8
JGQH	00	V	100	1	0	0	2.9	2.1	3.3
LDWR	00	V	100	28	0	0	2.9	0.5	-1.5
LDWR	12	V	100	29	0	0	2.8	0.5	-1.5
NPH	00	V	100	1	0	0	3.7	0.7	4.5
OXYH2	00	V	100	13	0	0	3.7	0.4	-0.3
OXYH2	12	V	100	11	0	9	2.7	2.3	1.2
SHIPAF	00	V	100	1	0	0	6.7	4.6	-2.4
SHIPAF	12	V	100	3	0	0	6.7	-6.9	1.7
SHIPC	00	V	100	1	0	0	6.7	-1.7	-3.5
SHIPS	00	V	100	3	0	0	6.7	4.4	0.2
UQYC	00	V	100	2	0	0	6.7	-0.1	0.0
V2EZ	00	V	100	8	0	0	6.7	-0.6	-0.8
V2EZ	12	V	100	10	0	0	6.7	-1.1	0.2
V2GH	00	V	100	17	0	0	2.7	-0.1	-1.9
V2GH	12	V	100	12	0	0	4.4	-2.4	1.1
V2LV	00	V	100	26	0	0	4.5	-0.2	-1.8
V2LV	12	V	100	26	0	0	4.2	-1.8	-2.2
03953	00	V	100	31	0	0	2.1	0.4	-0.8
03953	12	V	100	31	0	0	2.7	-0.6	-1.1
04018	00	V	100	30	0	0	1.9	-0.2	0.6
04018	12	V	100	30	0	0	3.8	0.2	-0.1
04220	00	V	100	30	0	0	2.8	0.4	0.5
04220	12	V	100	31	0	0	2.5	0.2	0.3
04270	00	V	100	29	0	0	3.4	1.3	-0.1
04270	12	V	100	30	0	0	4.3	-0.6	0.4
04339	00	V	100	27	0	0	3.3	0.5	0.1
04339	12	V	100	29	0	0	4.4	0.4	-0.7
04360	00	V	100	27	0	0	3.3	0.3	-0.5
04360	12	V	100	27	0	0	3.4	0.8	-0.2
08001	00	V	100	27	0	0	2.4	1.4	-1.3
08001	12	V	100	28	0	0	3.2	0.3	-0.8
08508	00	V	100	26	0	0	3.7	-0.9	-0.5
08508	12	V	100	29	0	0	3.8	-1.3	-1.1
08594	12	V	100	25	0	0	2.6	-3.0	0.8
60020	00	V	100	30	0	0	2.1	-2.2	-0.1
60020	12	V	100	30	0	0	3.9	-4.0	0.3
71600	00	V	100	30	0	0	4.0	0.8	-0.2
71600	12	V	100	30	0	0	3.5	0.1	1.0
72201	00	V	100	24	0	4	3.5	0.7	0.7
72201	12	V	100	24	0	8	4.4	1.7	0.7
72402	00	V	100	23	0	0	3.9	-0.8	0.3
72402	12	V	100	24	0	0	4.8	-0.4	-0.9
74494	00	V	100	19	0	0	3.3	-0.5	0.3
74494	12	V	100	28	0	0	2.1	-1.0	1.3
78016	12	V	100	26	0	0	5.7	-2.3	0.3

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: March 1996

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	2	0	0	3.1	1.4	-0.5
DBLK	00	V	500	1	0	0	3.1	-3.6	0.3
DBND	00	V	500	5	0	0	3.8	1.1	-1.1
DBND	12	V	500	4	0	0	3.8	-1.6	-0.5
EHOA	00	V	500	1	0	0	3.8	1.1	0.6
EHOA	12	V	500	18	0	0	3.8	0.7	0.7
FNOR	00	V	500	14	0	0	4.1	-0.1	0.3
FNOR	12	V	500	12	0	0	4.9	-1.7	-0.1
FNOU	00	V	500	5	0	0	3.0	1.0	0.6
FNOU	12	V	500	6	0	0	3.0	-1.4	-1.4
FNPH	00	V	500	9	0	0	3.0	-0.4	-0.7
FNPH	12	V	500	7	0	0	3.0	-1.2	-0.8
FNR	00	V	500	1	0	0	3.0	0.4	1.0
FNRS	00	V	500	10	0	10	3.0	-2.7	-3.9
FNRS	12	V	500	9	0	0	10.5	-5.5	2.2
GACA	00	V	500	31	0	3	10.5	1.2	0.4
GACA	12	V	500	30	0	0	5.5	-1.6	0.9
JGQH	00	V	500	1	0	0	4.6	-1.2	1.8
LDWR	00	V	500	29	0	0	4.6	1.1	-0.6
LDWR	12	V	500	28	0	0	5.3	0.2	0.4
NPH	00	V	500	1	0	0	3.1	-0.9	0.8
OXYH2	00	V	500	12	0	0	3.1	2.0	0.3
OXYH2	12	V	500	12	0	8	3.1	2.1	0.1
SHIPAF	00	V	500	6	0	16	2.5	-7.1	0.4
SHIPAF	12	V	500	6	0	0	2.5	0.0	-0.3
SHIPC	00	V	500	1	0	100	2.5	14.6	-9.6
SHIPS	00	V	500	4	0	75	2.5	-2.2	-2.7
SHIPS	12	V	500	3	0	66	2.5	-12.3	3.3
UQYC	00	V	500	2	0	0	2.5	0.9	3.0
VNAA	00	V	500	1	0	0	2.5	-1.5	2.5
V2EZ	00	V	500	8	0	0	2.5	-1.9	1.2
V2EZ	12	V	500	10	0	0	2.5	-1.6	-0.5
V2GH	00	V	500	21	0	0	4.3	0.8	0.7
V2GH	12	V	500	17	0	5	3.6	1.8	1.5
V2LV	00	V	500	31	0	0	6.7	0.2	0.4
V2LV	12	V	500	30	0	0	3.7	0.0	0.6
03953	00	V	500	31	0	0	2.1	0.6	-0.3
03953	12	V	500	31	0	0	3.7	-0.4	-1.8
04018	00	V	500	31	0	0	4.0	0.1	1.3
04018	12	V	500	31	0	0	4.4	-1.0	-1.5
04220	00	V	500	28	0	0	5.5	0.8	-0.6
04220	12	V	500	31	0	3	5.4	0.6	-0.5
04270	00	V	500	30	0	0	4.7	1.5	0.7
04270	12	V	500	31	0	0	4.5	0.1	0.1
04339	00	V	500	27	0	3	4.9	-1.2	-0.1
04339	12	V	500	28	0	0	5.3	0.2	0.0
04360	00	V	500	28	0	0	4.3	0.6	2.0
04360	12	V	500	29	0	0	4.2	1.6	0.5
08001	00	V	500	28	0	0	3.9	0.8	-0.8
08001	12	V	500	29	0	0	3.9	-0.4	0.2
08508	00	V	500	29	0	0	3.9	0.4	0.4
08508	12	V	500	29	0	0	3.9	0.3	-1.1
08594	12	V	500	26	0	0	4.4	-2.7	-2.5
60020	00	V	500	30	0	0	3.4	1.6	0.3
60020	12	V	500	30	0	0	5.2	0.1	1.0
71600	00	V	500	30	0	0	3.8	0.7	0.2
71600	12	V	500	30	0	0	4.0	-0.1	0.3
72201	00	V	500	30	0	0	4.6	0.3	0.4
72201	12	V	500	31	0	3	3.2	2.0	-0.6
72402	00	V	500	29	0	0	3.3	0.2	2.1
72402	12	V	500	29	0	0	3.9	0.0	0.5
74494	00	V	500	30	0	0	3.2	-0.3	1.5
74494	12	V	500	29	0	0	3.1	-0.5	1.0
78016	12	V	500	28	0	0	3.8	0.0	1.2

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45